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From issue to action

The role of social and technical arrangements for enacting digital transformation in Norwegian higher education.

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From issue to action. The role of social and technical arrangements for enacting digital transformation in Norwegian higher education.

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Abstract

This thesis is an analysis of a selection of documents that introduced a strategic direction for digital transformation in Norwegian higher education. These documents imagine the future of higher education where digital technologies are pictured to play a large role. These documents have been studied to discover how the issue of digital transformation in higher education first was established and later translated into actions. In addition, a Digitalization board was constructed for higher education institutions to contribute to the discussion on digital transformation in higher education. Specifically, this study will examine the selected government documents and facilitated governing approaches, with the overarching goal of exploring what the issue is and how it is being translated into specific actions so that the institutions can embark on digital transformation. Inspired by several stances of the theoretical landscape within science and technology studies (STS), I will answer the following research questions: *Which social and technical encounters are affecting the imaginaries of digital transformation in Norwegian higher education? How are the documents and the Digitalization board set in place to allow these imaginaries to be carried out?* The research will allow us to see the social and structural circumstances that have made possible the vision to step forward and how it is turned into actions.

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1. Introduction

Today's age is a digital one. During the last decades, the impact of digital technologies has continuously forced sectors to adjust to the technologies' inherent possibilities to keep in line with an overarching social development. In 2020, the COVID-19 pandemic forced society to adopt widespread digital solutions to avoid physical contact, almost overnight. This was an especially clear change in higher education institutions, where on-site lectures were switched to video lectures, and students and teachers had to interact over digital platforms like Teams or Zoom. Although the transition to digital learning tools was far from perfect, this period was a catalyst for new digital possibilities that have increased the freedom and mobility of both students and researchers. The shift that the pandemic caused is a case of significant digital transformation. This refers to a turn to digital solutions and practices for development and problem-solving, as well as organizational adaption for effective implementation of these technologies. This shift is not limited to the educational and research sectors, but the ripple effect can be seen in large parts of society and social life. A consequence of this digital transformation is the sparked debates concerning the pace of these changes and how technologies can contribute to further development in higher education. This study will look at this through selected government documents and facilitated governing approaches, with the overarching goal of exploring what the issue is and how it is being translated into specific actions so that the institutions can embark on digital transformation.

The turn to digital technologies has for a long time been given attention in the public debate for a long time, often referred to as digitalization. Digitalization involves a strategic path for utilizing digital technologies. Digitalization has changed every facet of society, leading to significant shifts in how institutions work and solve their problems. Technological advancement brings with it large opportunities and can fundamentally change the core activities in institutions across the public and private sectors. This digitalization work has eventually developed into a digital transformation.

For a long time, digital technologies have been through to greatly impact the creation of new opportunities in the Norwegian higher education. Educational material, research data, pedagogical approaches, and the dynamics of engagement between higher education institutions, society and the labour market have all changed due to digital developments that have been implemented into higher education (Kunnskapsdepartementet, 2017). Digital technologies provide these higher education institutions both with possibilities and challenges. A central concern with the further use and implementation of digital technologies has centred around ways to take advantage of these possibilities while potential risks are addressed. On the basis of this, this study wishes to address the issue of digital transformation in the higher education sector through official strategies. These strategies show show the ways in which these possibilities and challenges are imagined. Furthermore, they can show how these imaginaries are shaped into an issue. The study will look closer at the structural arrangements that enabled this issue to come into being, as well as how visions of how the imaginary should be enacted.

The theoretical framework in this thesis aims to create a context for understanding how the issue of digital transformation in higher education came into being through different social and material arrangements. The framework outlines the concept of political technologies to show how these contribute to the political development. In addition, the approach of sociotechnical imaginaries will be used to describe how imaginaries of the future are affecting the decision on the digital transformation of higher education, and how these imaginaries can imprint a script into the digital technologies. For the methodological approach, document analysis (Asdal & Reinsertsen, 2021) will highlight the content of the documents on digital transformation in higher education. Author-text ensemble (Asdal & Cointe, 2022) will look closer at the work that has been put into writing the documents. From this theoretical and methodological point of departure, the thesis aims to answer the two following research questions:

> *RQ1: Which social and technical encounters are affecting the imaginaries of digital transformation in Norwegian higher education?*

> *RQ2: How are the documents and the Digitalization board set in place to allow these imaginaries to be carried out?*

1.1. Aims and objectives of the thesis

The effects of digital technologies in teaching and learning have been well studied. The same goes for the systematic implementations of digital technologies into higher education from an institutional perspective. However, little attention has been given to the processes in decision-making. Nor to the process of building structures that allow for digital transformation to be enacted. Therefore, this thesis wishes to examine how the issue concerning digital transformation in higher education has developed by looking at technical and social arrangements. This research aims to add to the existing literature on digital transformation in higher education by providing a perspective of a national strategic approach. The research takes the form of an interpretive study, looking closer at relevant strategic documents. The thesis intends to provide a systematic approach to the digital transformation strategy in higher education. Based on the results, the study wants to explore what is considered at stake when digitizing in this sector. Perspectives from science and technology studies (STS) will help disentangle how both technical and social encounters are equally contributing to modifying and developing the issue and what digital transformation could mean for higher education.

Higher education is an interesting field to study digital transformation because these institutions are largely autonomous. Many of them are tangled in long-standing traditions and established ways of operating. These traditions can be hard steered in favour of shared and common solutions, such as those the Digitalization board is meant to decide over. Therefore, I find higher education an especially interesting field for studying how such decisions are made and how the governing model influences these institutions. My study of the digital transformation of higher education and research in Norway will look closer at the latest Strategy for digital transformation 2021-2025 (Kunnskapsdepartementet, 2021) and the Action plan (Direktoratet for høyere utdanning og kompetanse, 2022.). It will evolve around the ways the sector itself is contributing to shaping the trajectory of a digital transformation through a governing model designed for sector involvement. It will also include discussions on what the term digital transformation entails and how it has been related to the understanding of educational quality. The thesis will specifically look closer at how the issue of digital transformation in the Strategy is translated into actions that can be enacted by the institutions. There will be given a closer look at the work that was put into making this issue, and how the institutions are kept aligned.

1.2. Thesis structure

The analysis is divided into two chapters. Chapter 4 will have a closer look at what the issue of digital transformation in higher education involves and how it came into being. It will then seek to establish how the notion has evolved from digitalization into digital transformation. Building on this, the analysis will look at the Strategy for digital transformation in higher education and the action plan in this context. The documents will be studied to disentangle how they present the issue and how imaginaries have contributed to these understandings of educational quality.

Chapter 5 disentangles how the Action plan translates the issue into specific actions within the higher education sector. It also takes a closer look at the document work that was included in writing both of these documents to explore the relationship between the administration and the sector. The chapter then goes on to discuss how the documents are written to keep the institutions aligned. The chapter researches the Digitalization board as a material artefact and a way through which the issue is created with the involvement of the public. In the end, it closes with an exploration of how social affordances are scripted in technologies, forcing the user to change accordingly.

Lastly, chapter 6 will present the findings in the two analysis chapters, together with a discussion of the results. The chapter will also give remarks on limitations and suggestions for further research.

2. Contextual background

The direction for digitalization in the higher education sector has been made bystrategies by the Norwegian government also in the years pre-pandemic. The increasing role of digitalization in the sector and the imagined possibilities it brings with it was the backdrop for the White Paper 16 (Meld.St. 16 (2016-2017)). This White paper proposed a further direction for higher education in Norway, where educational quality was high on the agenda. The paper also tied educational quality to the digitalization of the sector. Furthermore, the current status of the quality of higher education in Norway was put in an international context, inspired by the European Committee of Ministers (European Commission, 2013) and numbers from OECD[1].

One year later, the Strategy for digitalization for higher education (Kunnskapsdepartementet, 2017) was released. This presented the sector with suggestions for a common direction for the work with digitalizing the institutions within the sector, strongly influenced by the previous white paper. The first strategy for digitalization in higher education (2017) was released before the pandemic. The current Strategy (2021), on the other hand, was developed with an altered perspective on the need for digital technologies in higher education. This Strategy was released after the COVID-19 pandemic, which forced large parts of society into using digital solutions. This also included schools and universities. Higher education had to take advantage of the digital technologies available to keep up their everyday practice during several lockdowns. This showcased several flaws in the digital competence both for administration and students. The Strategy's (2021) goal is to improve on these flaws while taking advantage of the digital technologies. The current Strategy takes digitalization one step further from the first Strategy (2017) by presenting an imagined future for higher education by using the term *digital transformation* (Kunnskapsdepartementet, 2021). The Strategy aims to work towards a transformation of the core activities in the higher education institutions to be able to make use of the new digital technologies. Furthermore, the Directorate for Higher Education and Skills released an action plan in 2022. This plan gives suggestions and inspirations for the

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[1] For instance: OECD (2016) Automation and Independent Work in a Digital Economy: https://www.oecd.org/employment/emp/Policy brief or
OECD (2016) Educational Research and Innovation: Governing Education in a Complex World: https://www.oecd.org/education/governing-education-in-a-complex-world

institutions on how to go ahead with this work on digital transformation, both on a national and institutional level.

As a result, a board working on digitalization in higher education was formed in 2018. "Digitaliseringsstyret" consists of representatives from the different public universities and higher education institutions in Norway and is meant to create closer links between the higher education institutions and the public administration (Sikt, n.d.-b). The Digitalization board does not govern anyone but has a mandate to make suggestions to governmental actors and make strategic assessments. Additionally, the Board has become an important arena for discussions on the subject between the institutions and between institutions and to address concerns to governing organizations (Direktoratet for høyere utdanning og kompetanse, 06.10.23). The overarching goal is to make long-term goals for common funds.

The case of higher education in Norway was chosen out of curiosity for the involvement of the higher education sector in the development of a political strategy. The involvement of co-governing is also contributing to making this an interesting case. Recently, there has been an increase in the use of co-governing to facilitate for governing of complex problems. Co-governing is being pointed out as an appropriate way to govern for these problems to be solved because it enables dialogue and solutions to be made across institutions, sectors and areas of interest. On this basis, governing models are an interesting factor to study to map their potential in providing solutions developed through discussion. The Strategy (2021) and the related Action plan (2022) link to other ongoing measures for digitalization in Europe. The plan to make higher education more digital and students digitally skilled are ongoing project in the EU[2]. Additionally, the co-governing model is tightly related to current traditions of public governance in Europe generally, and Norway specifically[3]. Co-governing is understood as the "process where the core is that different goals, values, activities, resources or other premises are seen in relation, prioritized, balanced and adapted to one another" (Direktoratet for forvaltning og økonomistyring, 23.02.23). This could be adapted to processes for policy making or dividing of resources and shape the way models for governing

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[2] The digital education action plan (2021-2027): https://education.ec.europa.eu/focus-topics/digital-education/action-plan Digital program Europe: https://digital-strategy.ec.europa.eu/en/activities/digital-programme
[3] Mot alle odds? Veier til samstyring i norsk forvaltning (Difi): https://dfo.no/sites/default/files/fagomr%C3%A5der/Rapporter/Rapporter-Difi/mot-alle-odds.-veier-til-samordning-i-norsk-forvaltning-difi-rapport-2014-7_0.pdf

are put together. This way of governing is increasingly used across the Norwegian public sector, especially in cases concerning interdisciplinary collaborations or complex problems.

When referring to "the sector" in this thesis, I mean the institutions in higher education and research in Norway. These are institutions that are providing a service and/or are producing knowledge within the field of higher education and research. These can be universities and higher education institutions, as well as research centres. They vary in size, both concerning the number of students and employees. Together, these make up the sector of higher education as it is being referred to in this thesis.

2.1. Digital transformation in the social sciences

Past research on the implementation of digital technologies in higher education has largely increased in publications over the last few decades. This development is in line with the increasing interest in studies on the relations between science, technology, and society. However, the specific topic of digital transformation in higher education sparked new interests in the wake of 2020, when the COVID-19 pandemic disrupted large parts of society. Between the years 2020 to 2023, there were almost tripled publications on the matter compared to the period between 2000 to 2020[4]. The COVID-19 pandemic forced universities and learning institutions to take advantage of available digital technologies to facilitate online teaching and studying. The rapid turnover to digital solutions as part of everyday life in higher education and research has been a catalyst for renewed interest in the impact digital technologies are playing for higher education institutions.

The studies on digitalization in higher education the recent years can largely be divided into two main categories. 1) A systematic approach to the implementation of digital technologies into higher education that has been conducted so far. These studies mainly focus on digital implementation as a slow process and make strategic comments and suggestions for further work. 2) Research focused on the effect digital technologies have had and will continue to have on the learning outcome and knowledge production for students and teachers in higher education. These studies take a closer look at students' experiences with digitalization in learning, as well as potential risks and/or problems of digitalizing higher education. Looking

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[4] From search on Google Scholar
https://scholar.google.no/scholar?start=10&q=digitalization+higher+education&hl=no&as_sdt=0,5&as_ylo=2020&as_yhi=2023

into these studies will ground this study in the research and mapped field of higher education digitalization. Several studies have looked at the situation in Norway.

Institutional perspectives on digital transformation in higher education have been provided in the book by (Pinheiro et al., 2023) who have focused on the turn to digital transformation in the Nordic countries. They have focused on the disruptive effects of implementing digital technologies into higher education as this latest turn to digital technologies has involved larger restructures of substantial organizational adaption (Pinheiro et al., 2023). They provide a broader systematic framework and embrace the multiple dimensions that are tied to digital transformation in higher education. They consider a complex interplay between a wide range of factors and mechanisms that are contributing to how digital transformation is being enacted in higher education in the Nordic countries.

One of the contributing chapters in this book has looked closer at the social and material arrangements for technologies to be implemented. Bygstad et al. (2023) explain how digital technologies have been implemented in higher education after the COVID-19 pandemic. The authors suggest that the slow implementation of a digital learning space is due to the unintegrated development of systematically applied digital solutions (Bygstad et al, 2022). However, the pandemic gave the sector a disruptive shock and sent it in a new direction. They use an empirical example to explain how the digitalization of core activities at the University of Oslo has followed two separate tracks, which they suggest calling a process of dual digitalization (Bygstad et al., 2022). The pandemic made the two tracks align, which are now evolving into a digital infrastructure. According to their analysis of the implementation of digital tools and solutions, they suggest that these two tracks were forced closer due to COVID-19 and indicate that a successful digital transformation is dependent on the interplay of several correlating tracks and factors.

On a parallel track, Aagard et al., (2018) focused more directly on the government's approach to digitalization in higher education in Norway. They were interested in the relationship between the White Paper 16, 2016-2017 and the claims it makes about educational quality. This white paper first suggested a national approach to the work on digitalization in higher education. They emphasize that digitalization is related to the perception of work-life relevance, as it opens for accessible education and can make learning more active. To transform higher education for higher quality, Aagaard et al. (2018) note that there is a need

for human action. Only through a continuous trial of different practices can one find the right way to include digital technologies and to use them for bettering the outcome in learning and teaching. Aargaard et al. (2018) refer to previous studies on the implementation of digital technologies in higher education that have shown this to be challenge. Most of the previous digitalization in educational institutions has been applied to the administration, rather than using technologies as tools in teaching and education. Aagaard et al. (2018) also mention how institutions with a long history and a traditional and traditional ways of thinking, do not have changes come easy. An approach to further research on the work of implementing technologies into higher education could therefore be to study how these technologies can be used to transform the current practices of the educational system (Aagaard et al., 2018).

Additional relevant studies on the role of digital technologies in higher education have been focused on user perspectives on digital technologies. For example, Ugur (2020) shows that students' experiences with digital technologies diverge. Furthermore, the study also shows that the definition of education is expanding and is increasingly expected to involve an aspect of how to behave in digital contexts and with digital tools. The knowledge produced in higher education sectors should not only include an academic discipline but also include digital skills (Ugur, 2020). The successful implementation of digital technologies in educational settings is often related to a pedagogical shift (Ugur, 2020). This is again reliant on how this shift is integrated into the wider educational institution as a whole. User experience with digital technologies is therefore reliant on a change in how teaching and learning are being done in practice (Ugur, 2020).

Other perspectives have shown that digitalization is considered valuable for creating better results in research and teaching, but can also be the cause of problems due to existing tension points between intended technological interaction and actual technological interaction (Pashkov & Pashkova, 2022). This can for instance be the negative impact of technological implementation, as interests, values and ideologies potentially can influence how technology is used and implemented in higher education. Therefore, it is also important to note that digitalization comes with risks and potential pitfalls (Pashkov & Pashkova, 2022), and must be implemented carefully with these potential problems in mind.

2.2. Digitalization in STS literature

Science- and technology studies (STS) is an interdisciplinary academic field that has interests in the relations between science, technology society. Within STS, science and technology are

understood as situated and changeable practices that are shaped and reshaped by social, cultural, and historical happenings. Classical STS work developed from a critical perception of science, research, and technology as self-driven and independent spheres (Henriksen, 2023). The field has evolved into multiple sub-branches, such as politics, innovation, feminism, democracy and infrastructure, just to mention a few. An understanding of the importance of a network as both a theoretical and methodological approach has been critical to the development of science and technology studies. This approach emerged in the 1980s and views all social situations as existing in a relational network, where people, things, interests, processes, and ideas all equally contribute to the network. Bruno Latour (1992) among others, was a central figure in the development of this approach, where the importance of material layers was emphasized and the attention on human intention was muted (Feenberg, 2016). This developed into what is known as actor-network-theory (ANT) which seeks to discover the sociotechnical networks consisting of people and things, in which society exists. With ANT, human agency cannot be favoured over the agency of things (Feenberg, 2016). Sociotechnical considerations are central also for understanding the theoretical and methodological outcome of this research. Although ANT is not directly applied as a method or theory, this theoretical branch of STS is foundational of this research.

The public sector and digitalization have long been of interest to STS scholars, having turned their attention to what it includes and how it is being enacted in social worlds. The introduction of digital technologies has brought fundamental changes to how people behave- from social interaction to public administration. Studies of technological artefacts through the lens of STS have focused on the way these objects contribute to constructing networks where actors and actants are in a continuous relationship with each other. Thus, work on digitalization within STS has mostly been concerned with the transformative power of digital technologies, and how these have motivated a shift in how humans perceive the social world. Summed up, the STS focus has been on how society and technological artefacts are co-produced (Jasanoff, 2006).

Further research within STS conceptualized theories surrounding political technologies, such as the ones presented by Kristin Asdal (2008). Political studies have had a tradition of perceiving politics as only consisting of discourses, discussion, values, and ideas. Many of the contributions to this area of research stem from the research on where and how politics emerge (Asdal et al., 2008). However, the expanded understanding of politics explores how

politics are made up not only of human affairs but also of materialities. This means that physical structures that make up the political system are equally important in the making of politics as social factors. The theories of political technologies explore these materialities as "technologies of politics" (Asdal, 2008). These are tools for public involvement and touch upon the essence of several central debates concerning politics and the public within the field of STS.

This thesis will add to the existing literature on digital transformation in higher education by providing a perspective of imagined futures for higher education and how digital transformation is included in this imaginary. Digital transformation is both a complex and an evolving process, and to capture it fully is a complicated task. The thesis will contribute by looking closer at how public administration enables for digital transformation by establishing structures that allow this imaginary to come into being. By showing how decisions are made through a continuous dialogue between the institutions and public administration, the thesis will show how the visions were developed and how they are being translated into the actions that are set in motion within the higher education institutions.

3. Theoretical framework and methodological approach

3.1. Theoretical framework

The theoretical approaches for this research have been selected because they bring valuable perspectives to answer the research questions. The research will explore what digital transformation entails for higher education and how this can be enacted in the sector. To better understand ways of envisioning the future of education and engaging with these technologies, the research will draw on several theoretical perspectives from science and technology studies.

3.1.1. The issue-approach and modifying work

One perspective from STS that contributes to disentangling the emergence of digital tools in society is the issue approach, assembled and presented by Noortje Marres (Marres, 2007). This is based on John Dewey's studies on 'things in their becoming' (Dewey et al., 2016) and understands issues as shaped and developed out of the pragmatist notion that democratic politics centres around a particular articulation of an issue (Marres, 2007). The question is then whose knowledge is required to govern. This was ultimately thought to be either an involvement of experts, on one side, or public participation, on the other (Dewey et al., 2016). Dewey thought that the public where able to gather around issues of shared concern and acquire the knowledge necessary for rational self-governance. Publics are concerned with the consequences of human action, of which actors should have influence (Dewey et al., 2016). These "public affairs" (Marres, 2007, p.768) should be put centre stage, so the public can be involved in solving them. While the pragmatists considered the notion as interchangeable with 'problem', the post-positivist perspective on an issue does not assume it to ultimately be solvable (Marres, 2007, p.768). Thus, an issue is never given, it requires articulation.

This has been elaborated on by both Marres (2005; 2007) and Asdal (2015). They have worked with the formation and modification of an issue and define it as something that can be understood as a politicized question with the capacity "to gather a public of interested actors around itself" (Asdal, 2015, p.75). From what Marres (2007) discusses, an issue is not something which presents itself to the public and becomes contested. An issue is rather something that is established by certain social and material arrangements. An issue can therefore be understood as something that is contested and politicized (Marres, 2005) and is

articulated through available material and technical arrangements. Therefore, Marres (2007) provides an STS perspective by arguing that before something is perceived as problematic and counted as a matter of public concern, it must be properly articulated (p. 768).

If social and material arrangements contribute to modifying the issue of digital technologies in higher education, research on issue development can take the form of looking closer at how the documents and document work modifies the issue when it travels through the political institutions (Asdal, 2015). Asdal (2015) presents the term 'modifying work'to describe how documents are particularly important in the shaping of an issue. Documents modify their relevant issue through "their rhetorical strategies, their conceptual work and the relations that the text enacts" (Asdal, 2015, p.77). Documents are sites for politics and administration (Asdal, 2015) and must be studied as material-semiotic arrangements. By studying documents as material-semiotic while researching an issue, they can contribute to discovering how the issue has emerged. The issue approach invites the researcher to open up the matter that is being researched to fully grasp how it developed. We cannot only ask what the issue is, we also have to ask how it came into being (Marres, 2007). For this thesis, the issue approach is valuable for disentangling the creation of the issue of digital transformation, through modifying work. The issue of the digital transformation of higher education in Norway has formed out of a need for a strategic approach to the implementation of digital technologies while reformulating what the tasks of the university and higher education sector should be in the future.

3.1.2. Technologies of politics

From what the Marres (2007) describes, to understand the issue one cannot only ask what an issue is or does, but also how it came into being. To do this, the material artefacts surrounding the issue must also be taken into consideration. Asdal (2008) uses the notion of a device to understand the objects of politics, and how they have a bearing on how interests, values and controversies are being produced (Asdal et al., 2008). This concerns how material arrangements matter in political controversy (Asdal et al., 2008) to show how politics do not exist exclusively as the result of human affairs. Material artefacts matter for who that gets a say in an issue, and to the ways the issue is articulated through public involvement. To produce a matter of concern means to involve a range of material resources and procedures and these enable for something to become political (Asdal, 2008, p. 6). The material arrangements matter to the way politics are being formed and performed. These material

arrangements in question can for instance be the documents involved in shaping and developing an issue. It can also be the arrangement of different social and political arenas that enable political encounters. Like Marres (2007), Asdal (2008) seeks to understand how something evolves into an issue and looks at how materialities facilitate for this. In this approach, politics are just as much about how interactions and participation are made possible by technical and material arrangements.

While material conditions for public administration must be taken into consideration in understanding how a specific issue was established (Asdal 2008, p.15), a political site or event is not exclusively constructed by public administration. It is also constructed in places outside the ordinary political system (Barry, 2001). The political is also constructed by a public. As described in the section on issue approach, a public involves "the people directly or indirectly affected" (Asdal, 2008, p. 20). Political tools are in this context understood as tools for public involvement. Here, political matters can be discussed and produced through public involvement. The Digitalization board is a material arrangement (Asdal, 2008), where the issue can be re-framed and redirected by a public. These material arrangements matter to the political debate (Asdal et al, 2008, p. 5). The aim for using this theoretical approach is therefore not only to study what the issue is, but how it is being shaped and done through involved material arrangements.

For this research, the issue approach will be used to disentangle what the terms digitalization and digital transformation entail and how these terms have come to be related to the higher education sector. The approach will also be able to tell how these notions have been worked on and modified in the documents, and if the Digitalization board have contributed to this modifying work. Political technologies will in this research help discover how the documents and the Digitalization board are material arrangements that contribute to the shaping and modifying of the issue. These arrangements also bring out certain voices and become tools for political decisions.

3.1.3. Sociotechnical imaginaries

The research will also explore how certain ideas about the future can grow from technical artefacts. STS literature has focused on adding thickness and a social dimension to the ways we perceive and understand technologies. Literature on these perspectives has made a point out of the way that science and technology shape values and norms. Technologies are co-

produced (Jasanoff, 2006) in relation to other social aspects. Co-production involves the interdependence between human actors and the technical world (Jasanoff, 2006). This gives a way for the researcher to explore the complex entanglements of science, technology, and society to discover how there is no necessary distinction between the ways humans perceive the world and the way they choose to live in it (Jasanoff, 2006, p.2). Consequently, this also affects how humans imagine their futures, where technologies contribute to produce the social world, and the social world contributes to create technologies (Felt, 2017). This co-production affects how a society imagines its own development.

Sociotechnical imaginaries (Jasanoff & Kim, 2015) describe how visions of the future are tied to normative values in today's social world, and how these values evolve through collective imaginaries. According to Jasanoff and Kim (2015), sociotechnical imaginaries are "collectively held, institutionally stabilized and publicly performed visions of desirable futures, animated by shared understandings of forms of social life and social order attainable through and supportive of advances in science and technology" (Jasanoff & Kim, 2015, p. 4). These sociotechnical imaginaries of the future are imbued with an implicit understanding of the social world and more or less shared meanings of social life that reveal a desirable future (Jasanoff &Kim, 2015). These are ultimately visions of a good society, although imaginaries also entail fears and risks about ongoing and future development and innovation (Jasanoff & Kim, 2015). This is enrolled and enacted into collective imaginations through shared knowledge.

The framework of sociotechnical imaginaries will give insights into how these collectively held visions of the future constitute and justify associated policy trajectories (Beck et al., 2021) of a digital transformation of higher education and research in Norway. It makes visible how digital solutions are imagined as a practice generated in pursuit of this desired future. Jasanoff notes that these understandings are often intertwined with nation-building (jasanoff, 2006). By highlighting the term sociotechnical with the understanding of imaginaries, one can discover the technical, political, and normative dimensions included in such policymaking (Beck et al., 2021) and how they are co-produced together with technical and material surroundings. These features build expectations involved in shaping social life. Thus, it is possible to understand how imaginaries of the future become instruments of legitimation that enable and enact political decisions by challenging or justifying policy choices (Beck et al.,

2021). Hopes and dreams, together with the perception of risk and vulnerability make desired futures.

3.1.4. Script

STS have for a long time engaged in studies with a user perspective. These have often referred to the users as passive receivers of technology. Script (Akrich, 1992) has instead been used as a theory to understand the relation between user and technology, and more accurately, the relation between how technology is designed and how it is used. Scripts contribute with an imagined way to engage with technologies (Akrich, 1992) and refer to the way a technological artefact is designed with an intended way of using it. Akrich describes how technological artefacts come with a script for how they should be used and that these scripts are filled with imaginaries of who the user is. Technologies have the user's imagined tastes, competence, and motives inscribed into them, and this script "defines a framework of action" (Akrich, 1992, p. 208). These representations of the users are materialized into the artefact's script.

Fallan (2008) divides between a physical and a sociotechnical script. The physical script is embedded into the technology's physical form, which tells the user about its intended use. The sociotechnical is the product's social symbolic, emotional, and cultural meaning. This involves the communication surrounding the product, such as the designer's image of the user, but also market position, brand identity, feedback from the user and advertisement (Fallan, 2008, p.65). The physical and sociotechnical scripts are not a dichotomous description of a product's intentions and design. Rather, they propose a more nuanced description of script theory (Fallan, 2008).

The script theory provides the researcher with a useful tool for identifying intended and imagined ways that the user is meant to engage with a technology. However, both Akrich (1992) and Fallan (2008) acknowledge that the user can choose to either accept or reject the script when engaging with a technology. The imaginary of the user can be wrong or incomplete, therefore technologies are continuously evolving. Users are valuable a source to make technologies. Akrich (1992) therefore argues that technologies and artefacts never are neutral, but scripted with meaning and values.

The framework assigned by sociotechnical imaginaries and scripts will be used in this research to open up ongoing and suggested actions for a digital transformation in higher education that can be read in the documents. This will be used to disentangle the imaginaries included in policymaking. Imaginaries will also be combined with the theories on script to discover how these imaginaries are scripted into the technological artefacts while looking closer at the way this impacts how technologies are implemented into higher education in Norway.

3.2. Methodological approach

This thesis aims to approach the topic of digital transformation in higher education through the released documents and interviews and to open up the empirical data with the use of the theories. The empirical material included in the thesis will make it possible to put light on the objective and to answer the research question by giving an insight into how the issue at hand came about and how it has been shaped by the technologies of politics present.

3.2.1. Approach to data collection

I chose the topic for this thesis after having discovered the Strategy released in 2021. To get a clearer view of the topic, I first looked closer at the previous state administrative documents on this topic, parallel to other currently effective documents. Once I had an overview of the political and administrative documents released on this topic, I made a timeline to connect their content and approach to the topic. After this, I made a literature search for published work in STS first on digitization and digital transformation before I narrowed the search more specifically to digital implementation into public sector, and then later higher education. The contrast between the imaginaries that were presented in the documents and how these imaginaries are being enacted through political technologies soon became a relevant angle in continuing the research.

I wanted to study how different actors from a selection of relevant institutions within the higher education sector view the impact of digital transformation on higher education. I also wanted to discover how visions for the future came into being, how it was articulated into an issue, and if this has changed over time. I also discovered that this issue was discussed and decided upon through a governing model. I wanted to look closer to see if this governing

model enabled the issue to come about. With this as a point for departure, I sketched out a research design and research question to start the collection of data material.

This is a qualitative study and builds on empirical data. This includes five semi-structured, in-depth interviews, with six different informants. It also includes central political and administrative documents, where two of the currently active documents, the Strategy for Digital Transformation in Higher Education (2021) and rhe Action plan (2022). The design of this research is made from an approach where the theoretical framework develops from the empirical data and is used to describe a phenomenon or situation, instead of starting with a predefined hypothesis. The results that are presented in this thesis have developed from the empirical material, and the different theories help to present the findings from different perspectives central to the STS field. For this thesis to be transparent research, I would like to justify my choices of methods.

3.2.2. Practice-oriented document analysis

Practice-oriented document analysis has been chosen as methodological approach for this research. Practice-oriented document analysis was developed in close relation to several of the approaches in the STS field, such as ANT and issue studies. These fields of theories do not only introduce a way to understand different social and political stands but also how to study them. The document analysis that is developed and presented by Asdal and Reinertsen (2021) has been included in this research because of this practice-oriented perspective. The practice-oriented document analysis is valuable for this thesis because it presents the ways it should be used to study documents, by building on issue studies and ANT as methods. The practice-oriented method provided by Asdal and Reinertsen (2021) sets out to discover not just what a document says or does, but also what has happened before and after an issue is presented in a document. That means it searches for answers to how an issue enters into a document, and how these documents intervene with the world outside themselves (Asdal & Reintersen, 2021). To be able to grasp this, one does not only have to understand the document itself but also the practice field it has been developed. For instance, how the Strategy for a digital transformation of higher education is developed and shaped in one certain context of practice, which is affecting and being affected by the document. Documents have not necessarily evolved from a neutral standpoint but have been shaped by someone for a specific reason (Asdal & Reintersen, 2021, p. 4). The practice-oriented method should also seek to discover this dimension. In addition, a practice-oriented document analysis makes it possible to

discover the performative nature of the document. This means an analysis of the document should in addition to studying the way a document came into being, look at how the document and the practices are interpreted, understood and effectively shaping later documents. This will be done by looking at the Strategy for a digital transformation and the Action plan and how they are connected.

3.2.3. Text-author ensemble

The document analysis will be supplemented with interviews with employees in the Directorate and Ministry within the section for digital transformation and members of the Digitalization board. The interviews will be used to understand how the issues are made within the different institutions and how public policy workers view their role and the implications of the policies they make. The interviews will also be used to discover how the documents are affecting the work that the policymakers do, from one institution to another.

By analysing the documents together with interviews with their authors, one can discover and extract the practices that are not so easily observable from a document. The texts are produced and formatted in the very writing of them, and the effect the author holds on the content of the document can then become observable. Members of the Digitalization board can give an insight into how the board and the documents as political tools have relational encounters, and give information about the effect the Digitalization board has on the actions that are being realized in the sector. The method of 'author-text ensembles' (Asdal & Cointe, 2022) makes it possible to see the connection between the scholarly framework the theories make for the topic while putting them in relation to the actual happenings out there. The interviewees' accounts should not be considered as the truth, but "as accounts of what is perceived as legitimate in a professional group" (Mangset & Asdal, 2019, p.9). The combination of text analysis together with author interviews will give a full insight into the emergence of an issue and the work that is being put into writing the documents.

In this thesis, the choice of theoretical framework is close to the empirical data. The methods used in the thesis are therefore chosen on the grounds of the data material because they are valuable methods for analysing the material. The terms that have been included as the theoretical framework for this thesis also need to be operationalized to properly cast light on the case that is being researched. For that reason, method and theory are indispensable. The theoretical framework included for this research is interpretive and therefore needs to be used

together with a method that can identify and utilize the analytical lens which these theories offer. The methods chosen to support the theoretical framework will bring forth the data necessary to conduct a satisfactory analysis. The methods will dig deeper into the material available while searching for supporting elements by collecting both the texts available in this case, and the authors' thoughts.

2.3. Research ethics and reflections on research approach

The documents selected in this thesis have been chosen on the grounds of their authoritative nature and impact on the sector. The documents have been chosen because of the thesis' focus on the governing model for the implementation of politics concerning digital transformation. Thus, assembling documents for the research in this thesis is best understood as generating empirical material, not collecting it. The assembling of documents for researching this topic has been guided by the research questions in chapter 1.

For the data collection, I started with an introductory talk with two representatives from the Directorate for Higher Education and Skills. This provided me with an overview of the ongoing work on digital transformation of higher education today, what has been done so far, and what is envisioned for the future. From this, I then mapped out the other actors involved in the work on digital transformation in the higher education sector. I also formed an interview guide consisting of questions based on initial insight. Subsequently, I contacted employees in the Directorate for Higher Education and Skills, The Ministry of Education and Research, and representatives in the Digitalization board who were connected to the work on the Strategy and the Action plan. In total, I reached out to seven potential informants, and five replied with a positive answer. Two did not answer. This resulted in five interviews with in total six informants. Informant 5 brought a second co-worker to the interview, who also replied to some of my questions. This person has been included as an informant, listed as Informant 6. In the end, representatives from all the contacted authorities have been included in the study. I wanted to interview two from the ministry and the Digitalization board to cross-check the answers they give and to discover if the perception of the institution's role in digitalization changes from one person to another. However, I was not able to get in touch with another informant from the Directorate and decided to instead include some information from my introductory talk. Despite interviewing a small sample of informants, I found their answers informative and appropriate for the study. However, if this study had been of larger

concern, I would also have wanted to talk with another informant connected to the work on digital transformation in the Directorate.

The research in this thesis has been conducted following Sikt's guidelines for ethical research (Sikt, n.d.), and those of the Norwegian national research ethics committee for social sciences and humanities (NESH, 2021). All informants were informed of the objective of the interview and the thesis in advance. The informants were given written information on the intentions of the research and gave their consent to the interviews being recorded and used as data prior to being interviewed. The interviews were recorded with UiO's Diktafon app, which directly transfers the data to Nettskjema for safe storage of confidential data. Two of the interviews were conducted digitally. In those interviews, recording was done through Teams and stored on my UiO user before it was transferred to UiO's storage space for research data, Nettskjema and TSD. The data will be deleted at the end of the research period. Concerning privacy considerations, all informants will only be presented with their place of employment, and further roles or professions will not be presented.

Table 1: Interviewees for this study

Informant	Work place/role with digital transformation	Relevance
1	Directorate for Higher education and skills	Employee in section for digital transformation and information security.
2	Digitalization board	Member of the Digitalization board
3	Ministry of Education and Research	Worker in section for digitalization, budget and management
4	Digitalization board	Member of the Digitalization board
5	Ministry of Education and Research	Leader for both the working groups for the Strategies.
6	Ministry of Education and Research	In charge of following up the Strategy from the ministry's position.

4. Visions of digital transformation

This chapter will look closer at how the perception of digital transformation has developed from digitalization into digital transformation. It will be concerned with what the issue of digital transformation in higher education is and how it came into being. Theoretical framings as the issue approach by Noortje Marres (2007) and political technologies used by Kristin Asdal (2008;2015) will untangle the arrangements that made this issue possible to develop. This will be analysed through the Strategy and the Action plan, in combination with interviews.

The Strategy for a digital transformation of the university- and higher education sector (2021) was written by the Ministry of Education and Research. It was made from contributions from participating representatives in the higher education sector who together created a working group to work out a draft for the Strategy. The Strategy evolved from its pre-processor that first presented the sector with a national strategy for digitalization (2017). Before releasing the Strategy there were several inputs to the committee and hearings (from the Norwegian *høring*) at the Parliament. The Strategy is 36 pages long and was released 10th of September 2021. It is described as ambitious compared to the previous one, much because it aims to change the core actions within the institutions, and not only the administrative tasks that an institution of higher education is faced with.

The Action plan (2022) was developed and written by the Directorate for Higher Education and Skills as a direct follow-up to the Strategy. Its goal is to give a concrete direction for the strategic areas presented in the Strategy and give recommended changes for both common services and institutional measures. It is meant to apply to all universities and higher education institutions, in addition to the political-administrative institutions of higher education and research. The action plan follows the strategic areas that are listed in the Strategy and gives some suggestions for priorities and measures for each of these areas. It is not meant as an instruction on how to make a digital transformation. Rather, it shows potential directions related to ongoing measures at the different institutions.

The following chapter will give an analysis of the Strategy and the Action plan. The basis of the analysis is grounded in the structure, content, and groundwork of the two documents to discover how documents contribute to shaping and moderating the issue concerning digital

transformation in higher education. Imaginaries for the future will be explored as one way the Strategy develops a trajectory for digital transformation. The chapter will have a closer look at how perceptions of digital technologies in the higher education sector have changed over time. The imagined connection between digital transformation and educational quality will also be addressed. Combined, the analysis will try to understand how the issue has been developed and how it moves through the documents. Theoretical perspectives from STS will help open the topic to give perspectives on how we can understand the findings in this research.

4.1. What is the issue?

Prior to understanding what the documents do, we must first understand what they say. The issue approach was presented as a theoretical entry into understanding the becoming of certain stated or unstated concerns. These concerns are often "(...) contested, politicized and which has the capacity to gather a public around it" (Asdal, 2015, p. 75). The issue approach makes it possible to open the documents to discover how the issue they describe became something of concern and how it has been modified and what has made this specific issue.

The Strategy introduces the case of a digital transformation of higher education by stating that "there is great potential in making better use of digital tools in the higher education sector. (...) Consequently, higher education institutions must adjust to take greater advantage of digital technology." (Kunnskapsdepartementet, 2021, p.2). This paragraph touches on the Strategy's core argument. The notion of a holistic direction to take proper advantage of digital technologies in higher education is referred to as digital transformation. This transformation presupposes a change in the institutional activities to be able to implement the technologies. The quote tells that digital technologies have already been introduced to higher education and that the goal of this strategy is to include them better in the institutions.

> "The rapid digitalisation during the pandemic has shown that much remains to be done before digital tools provide the increase in educational quality we want.
>
> (...)
>
> Going forward, it will be important to continue the work of further developing quality in education, research, and innovation» (Kunnskapsdepartmentet, 2021, p.2).

These quotes from the Strategy's preface introduce the issue: to increase the quality of higher education with the use of digital technologies. The Strategy ties educational quality with

digital technologies and presupposes a change in the ways institutions are implementing and interacting with existing digital technologies. Thus, the issue concerns how institutions are not taking full advantage of digital technologies and need to transform in accordance with the technologies. If they succeed, higher education will be able to release its full potential. But how did this relational understanding of digital technologies and quality come into being?

To tell what the issue of making education better by digital transformation, one has to disentangle how these became linked together in the first place. One has to explore how digital transformation is imagined making changes to a whole sector. When exploring how an issue came into being, Asdal and Reinertsen (2021) suggest asking *by whom*, *by which means,* and around *which objects* the issue is formed (p.104).

Starting by asking who the issue was formed by, the documents give a large insight. The direction for digital transformation that the Strategy is displaying has not evolved by itself. It has been worked with and modified over a period by several different actors to be presented with a political agenda. The work on making a Strategy also included the sector (Kunnskapsdepartmentet, 2021). Like in the first Strategy, the sector was invited to make suggestions and comments and raise ideas on how the Strategy should end up looking. A close collaboration between the higher education sector and the Ministry was ensured through a working group with representatives from the educational institutions, the business community, the student organizations, and Unit (Kunnskapsdepartmentet, 2021, p. 6). This resulted in the current Strategy for a digital transformation of higher education. The issue can therefore be studied as framed and modified through the work of both the sector and the administration. The actors representing higher education are included because they are the ones who need to make the changes. They are prone to the challenges that might occur and have therefore been kept close in the process of writing the Strategy. The Ministry, on their hand, can make the political agenda to develop the sector, but changes must be made by the institutions.

Second, Asdal and Reinertsen (2021) suggest research how the issue has developed. There seems to be a continuous advancement in the technological tools that are developed. This faces the higher education sector with both possibilities and challenges as they make their way into the sector. They enable new ways of being and have therefore faced the sector with challenges. The changes that come with a digital transformation are directed towards

systematic changes of core activities within the institutions. This notion of digital transformation brings a new understanding to what the issue of digital transformation of higher education is, as the purpose of the Strategy "is to provide direction for the further digital transformation in a way that better enables the higher education sector to meet society's need for knowledge and skills." (Kunnskapsdepartmentet, 2021, p.5). Reading this quote makes visible that digital transformation is imagined to transform the sector, motivated by the possibilities technologies make for higher education and research. At the same time, the Strategy also reads that the transformation is driven by the fact that these changes are occurring everywhere in society, and no adaptation to these changes will mean not being prepared for these changes. The possibilities and aspirations the Strategy describes create an issue for digital transformation as both something that enables change and something that has to be facilitated for.

The last dimension Asdal and Reinertsen (2021) suggest exploring is around which objects the issue is formed. Above, I argued that digital transformation could be understood as the means around which the issue was built. To dig deeper into what kind of objects the issue is formed around, the notion of a political tool as presented by Asdal et al. (2008) in the section on theoretical framework must be used. The way they see it, political tools are materialities which enable certain interests, values, and controversies to be produced (Asdal et al., 2008). Their main argument is that politics are "not exclusively made up from human affairs" (Asdal et al., 2008, p.5), they are also made from material arrangements. Material arrangements enable something to become political, and these material surroundings have to be taken into consideration when examining how a political issue came into being. The documents that present the issue and the Digitalization board create entities which serve as material artefacts, where politics can be discussed and decided upon. Therefore, the Digitalization board and the documents are the materialities where different opinions are being voiced and procedures are done. Without these materialities, the issue might have turned into something else. Therefore, the governing model and the documents should be taken into consideration when exploring how the issue of digital transformation of higher education came into being.

These three questions make a good framework for discovering how the issue was developed. The answer to these will be kept in mind when going further into the document analysis. To involve the sector in making the strategy means to bring it close to the hopes and expectations of those who are meant to participate in the transformation. Framing the issue in terms of

these questions shows how social assumptions and technical surroundings contribute to the way the issue became something contested and politicized (Asdal, 2015). The possibilities and challenges technologies give have developed into an issue that needs to be solved, while the political objects around it have allowed it to be modified and opened for discussion. The Strategy presents its goal as to make sure to transform in a way that "better enables the higher education sector to meet society's need for knowledge and skills" (Kunnskapsdepartmentet, 2021, p.5).

4.2. From digitalization to digital transformation

As described in previous social science work on digital transformation, there has been a development of how technologies are imagined to be implemented into institutions, and what role they should play. The evolvement has been described as gone from work on digitalization, to digital transformation. The former refers to the processes through which digital artefacts are being implemented into an organisation. The technologies can be studied to have an effect on social and organizational arrangements (Benavides et al., 2020). Digital transformation, on the other hand, refers to the broad change which implies substantial organizational adaption. In digital transformation, technologies create disruptions that trigger strategic responses (Benavides et al., 2020). This next section will explore the evolution from digitalization to digital transformation in Norwegian higher education by exploring the two Strategies by the Ministry of Higher Education and Research (Kunnskapsdepartmentet, 2017; 2021).

By studying the issue through the documents, it is possible to have a closer look at what role technologies are imagined to have in higher education and how this has evolved over time. Comparing the Strategy to previous strategic plans for the implementation of digital technologies in higher education, there has been a conceptual change. The turn to digital technologies in higher education has previously been referred to as digitalization. This is what the first Strategy (2017) presents, aiming to use digital technologies as tools for doing tasks and solving problems. The current Strategy (2021) imagines the higher education institutions to transform so that new opportunities can come about. This must be put in context with surrounding disruptive features. The first of the strategies was developed prior to the COVID-19 pandemic. This one developed from the need to coordinate tasks on digitalization between the higher education institutions (Kunnskapsdepartementet, 2017). There was a need for a coherent strategy that could bridge these measures for a collective approach to digitalization.

The former strategy imagined digitalization and ICT as tools that could improve interaction, quality and the relevance of research and higher education (Kunnskapsdepartmentet, 2017). The newest Strategy (2021) was written after the outburst of COVID-19, which had a disruptive effect on the way digital technologies are used in higher education. The current Strategy is developed from experiences with digital tools as necessary to educate and study. This showed that technologies cannot necessarily be added onto existing practices without challenge (Kunnskapsdepartmentet, 2021). At the same time, the technologies awarded both students and teachers with big freedom. Therefore, the Strategy (2021) sees the need to develop institutional structures and practices in line with the preconditions of the technologies to exploit the possibilities they give. While the first of the strategies wants to digitalize, the latter wants to digitally transform.

The Strategy (2021) uses a definition of digital transformation by the Digitalization directorate, stating "A holistic approach to transform the enterprise, where the technology is one of many drivers and enablers". (Digitaliseringsdirektoratet, n.d.). What is possible to read from this is that the Strategy (2021) is mapping out a direction for how this change should be done at a sectorial level.

> "Currently digitalisation and new platforms are of powerful and growing importance for the sector, and in the coming years ICT solutions will have a great impact on education and research» (Kunnskapsdepartmentet, 2017, p.2).

> "We need to understand how digitalisation affects society and individuals. The change in technology may improve products, processes and services, but it may also increase social and cultural differences and challenge freedom of expression, privacy and security» (Kunnskapsdepartmentet, 2021, p. 4).

These two quotes are collected from the introduction of the two strategies. The first is painting a picture of the possibilities that come with technologies and the impact technologies make on society. The first Strategy (2017) presents technologies as growing in the higher education sector, while ICT solutions are imagined to have a large impact. This Strategy sees technologies as presenting the sector with large possibilities, but also with challenges. These challenges are occurring with the implementation of technologies. The current Strategy (2021) is not only concerned with how to use digital technologies but also how to implement them safely. According to the Strategy, digitalization is not just something the sector can do,

it is something it must do (Kunnskapsdepartementet, 2021). And to transition from digitalization to digital transformation gives a new light to the possibilities of digital technologies.

> *"With the new Strategy, digitization and digital transformation have to a larger degree been taken into, and put in relation, to the research activity and the lecturing. It sees how digital technology can be used to make lecturing more flexible, more accessible. (...) To make a closer interplay between lecturers and students. So, one sees more of the core activities in the institutions, sees how technology can be used to develop it and preferably makes it better."*
> - *Informant 1, Directorate for higher education and skills.*

Informant 1 gives a short, but precise description of what the digital transformation is imagined to imply for higher education. Technologies are not just imagined to be added to existing activities, but to be incorporated so that the full potential can be actualised.

> *"The first of the strategies was aimed at systems and solutions, that was to collaborate more to find solutions for more efficiency. (...) That was mainly the goal with the first strategy, while the second strategy was about digitalizing the core activities of the institutions. They have to change the way they work, the way they lecture, [and] the way they do research. (...) Therefore it is called digital transformation."*
> - *Informant 5, Ministry of Education and Research*

Informant 5 was included in the work on both strategies. The informant enhances that this Strategy is more concerned with change, both with institutional structures and with teaching and learning. While the first strategy turned to technologies for solving problems, the current Strategy wants to change the way technologies are taken into use. This means that the institutions must change together with the technologies to make sure the possibilities they give are utilized. They have to undergo a digital transformation. The Strategy (2021) imagines digital technologies in higher education as being performative for how they should be used, while its predecessor imagined technologies as tools. This is how the issue developed from digitalization to digital transformation.

Digital transformation involves all the changes the sector must undergo to be able to make use of the digital development and to utilize the technologies fully.

"Digitalization and what lies in that term is something that we really have passed because digitalization is the easiest part of the digital transformation. So, digitalization was in some kind of early terminology something that we have good IT systems that should help us in our everyday life. But digitalization alone does not mean that we are using them in a useful way, and that is probably where we are headed now".

- *Informant 2, Digitalization board*

Informant 2 is telling how the transition towards digital transformation evolved from digitalization. This quote can tell how going from digitalizing to digital transformation is not only a change in the perception of what technology will transform. From the work on digitalization, experiences with how digital technologies could be better utilized were made. The pathway into a digital transformation was first sought out by digitalization, which mapped out the possibilities that technologies have. One example raised by Informant 2, was how higher education went from writing the exams by hand to writing them on a computer and delivering it through a digital platform. When transforming into a digital exam solution, the platform made it easier to write and hand in the exam, but the pedagogical approach did not change. This meant that the ways to teach, learn and administer the process remained the same, and all that was new was an exam to be conducted on a screen.

The change from digitalization to digital transformation, both in perceptions of what they can do and what we need them to do, can tell about a dual motivation for a strategy on digital transformation. On the one hand, the Strategy imagines the possibilities digital technologies can make for the sector. On the other, a digital transformation is also motivated because the institutions are forced to. Not only do the institutions see the possibilities that digital tools give, but also the risk of not following the societal development. Therefore, the Strategy must be read as a holistic plan which considers the possibilities and risks throughout a digital transformation. Furthermore, informant 1 explains:

"The pace of the development is raising some issues, of course, but we just have to decide on them, because the development is happening. So, we need to balance it, because we should be able to see the possibilities, and at the same time have a conscious relation to potential challenges that might occur."

- *Informant 1, Directorate for higher education and skills*

Digital technologies are both what drives the development forward, but also because transformation is necessary to not fall behind. The potential a digital transformation gives to the sector is made possible by digital tools and technologies that are being introduced through continuous technological development. From the documents, it can be read how higher education institutions imagine making more of their potential if they do a digital transformation. This means that implementing technologies is not just something that is necessary, but also attractive.

4.3. Document analysis: presenting the vision

Digital development is pushing higher education into a new direction, not only by possibilities but also by risks. This means that the Strategy needs to articulate these possibilities and risks into something that the institutions can be collected around. This section will examine the Strategy for digital transformation in higher education 2021-2025 to see how it creates visions about the future. Additionally, the Action plan will be examined in relation to the Strategy to see how visions are translated into specific actions.

The Strategy (2021) is divided into five sections. It opens with an introduction, containing an overview of the overall objectives of the Strategy. Following this, the document introduces six strategic priority areas. These are meant to point out the direction the work with digitalizing higher education should take for the sector can make a digital transition. In the last section, the Strategy presents five visions for the future from the perspective of different users. Comparing the current Strategy (2021) to its predecessor (2017), this Strategy imagines the impact of digital technologies as essentially larger than the first one. The current Strategy sees large potential in digital technologies in higher education and expresses how they give large opportunities to lift the quality of education.

> "(…) there is great potential in making better use of digital tools in the higher education sector" (Kunnskapsdepartmentet, 2021, p.5).

The quote illustrates a vision of the future where higher education is making use of digital technologies differently than in the first Strategy. This Strategy paints a picture of what higher education can look like in the future, and how this can be actualized from today's position. For digital technologies to make the impact on higher education that they are imagined to, the Strategy presume that the sector will have to make a digital transformation. This transformation presupposes a reshaping of practices within the higher education institutions.

The institutions must transform to properly fit with the digital technologies. Broadly speaking there are two categories for transformation which separate this Strategy from the former one. These categories are 1) strategies to transform practices, and 2) higher relevance for users. They have been created by sociotechnical imaginary of the future where higher education can be better than today through the possibilities that digital technologies give.

The first category to existing routines in teaching, learning, and research to make the outcome of the digital technologies larger. Connected with this is the perception that a larger outcome from the technologies also means better learning for students. An example of this is how the Strategy suggests evolving the teaching methods around the possibilities the technologies give:

> "Develop pedagogical principles and didactic methods that contribute to the use of different digital teaching and assessment methods to improve learning, as well as involving all students." (Kunnskapsdepartmentet, 2021, p.13).

The Strategy states that the higher education institutions are not taking the full potential of the digital technologies available. Digital technologies are not only meant to be supplemented to existing practices but they should also be transformed to make the technologies part of teaching and learning. This means that teaching and learning should develop methods along with the technologies that exploit the possibilities technologies give. This could for instance mean making use of technologies that force students to become more active. This also means that teaching must facilitate for such technologies to be used, and to use them correctly. With the vision in the Strategy lies new possibilities where the educational quality can continuously be developed.

The second category of strategic measures in the Strategy is how digital transformation should focus on making education with high relevance for students and academic staff. The Strategy presupposes that students will increasingly need to develop digital skills for the future labour market and as citizens in a digital age.

> "If the institutions integrate digitalisation-relevant topics in the academic content of all study programs, the students will receive a more relevant education that provides them with the necessary vocationally adapted digital skills. That is, skills to understand and integrate digitalisation in one's own subject and creatively utilize the opportunities that digital technology provides in the execution of the subject" (Kunnskapsdepartmentet, 2021, p. 16).

The Strategy envisions a future where students will have to use their digital competence to be able to evolve with technical development. This quote shows how the Strategy imagines making digital skills part of educational programs to make students more capable of meeting challenges and expectations in their careers.

These two categories differentiate digital transformation from the previous focus on digitalization in the higher education sector. The two categories focus on ways to transform higher education in line with technologies. This imaginary is a representation of how the Strategy wants higher education to be, constructed by both material and normative dimensions. Digital technologies constitute a central part of this vision, where technical preconditions are developed together with norms and meanings in higher education. The imaginary for the future of higher education is sociotechnical (Jasanoff, 2006), constructed from both social and technical arrangements.

Prolonging the Strategy, an Action plan was released by the Directorate for Higher Education and Skills (2022). There was a need to take the overarching imaginary in the Strategy down a level, to make a more explicit plan for actions. The Action plan was made to give suggestions on specific actions towards a digital transformation. It points to already ongoing measures in the sector considered valuable to enact the visions in the Strategy. In addition, the Action plan suggests new measures that the sector can participate in. The plan is meant as a proposal on how to continue the work with digital transformation. It aims to give suggestions on areas that the sector agrees on. The action plan envisions the collected sum of these actions as what will move the sector towards a digital transformation.

> *"The intention with it is to show measures, activities, and priorities that maintain the different strategic measures in the Strategy".*
> - *Informant 1, Directorate for Higher Education and Skills*

While the Strategy creates a direction for digitizing higher education, it is left to the action plan to figure out how it is possible to do this. The Strategy is ambitious, and "the sum of all the areas for measures are more than what the sector can implement during the period" (Direktoratet for høyere utdanning og kompetanse, 2022, p. 5.). The Action plan therefore needs to make priorities and must be studied accordingly. The Action plan acknowledges the transformation the Strategy suggests and aims to find the actions that can take the sector in

this direction. The action plan is therefore more systematic in the approach to find actions. The plan lists four qualities to prioritize actions:

- It fulfils identified user needs
- Gives value to the core actions and community that is larger than the costs
- Solves fundamental challenges and makes innovation possible
- Capacity and execution ability are of a satisfying nature

    (Direktoratet for høyere utdanning og kompetanse, 2022, p.5)

These qualities make the fundamental grounds for deciding on actions. The actions that are suggested in the plan can seem like they are grounded in two main arguments: if they can solve a problem or a need, and if doing them does not impact the institutions negatively in any way. The action plan should be considered together with the Strategy, where the imaginary is established in the Strategy, and translated into ways they can be enacted in the Action plan. Thus, the issue travels across the documents and is modified through this rendition.

4.4. Five visions for the future

At its end, the Strategy (2021) gives five visions for the future where digital technologies are imagined to be a part of higher education. These visions are presented from the perspective of five different actors: the student, teacher, researcher, management, and the labour market. These visions are meant to map out what possibilities digital transformation can give for each of these actors. STS literature has paid attention to the ways technologies are impacting social life, and how it enters social relations imbued with meaning and morality. Public attitudes and collective meanings are co-produced with technologies, and the imaginary that comes into being is dependent on national, local and institutional expiries and practices (Burri, 2015). The imaginaries in the Strategy have developed from continuous reciprocal encounters between social actors and technical artefacts. Thus, a change is not only considered through what the technologies can do but how they relate to social establishments and how actors can exploit them in their networks. This capacity to imagine a future is crucial for constructing social and political life (Jasanoff & Kim, 2009) because imaginaries project a positive goal and seek to attain it. These imaginaries are imbued not only with what is possible but also with understandings of what is good and desirable. This means that imaginaries of a digital future for higher education hold an understanding of what the public good is. They are co-produced with the possibilities that technologies give (Jasanoff & Kim, 2009).

These imaginaries are mapping out a future for where higher education can be heading. They are painting a picture of what can happen when the technologies are utilized in the contextual surroundings of higher education. Technologies give possibilities that enable this strategic pathway. If the possibilities are exploited, the imaginary can be realized. The strategy explains that the management should:

> «Exploit the opportunities provided by digital technology to raise the quality of education, research and dissemination by including digitalisation both in planning as well as specific measures and processes» (Kunnskapsdepartementet, 2021, p. 28)

This quote tells how the future is imagined around the public good by expressing that technologies can raise the quality of higher education. Technical preconditions are encountering social relations and higher education quality. Thus, higher education is imagined to transform these social and technical conditions. Technology and political interests are co-produced. This affects the consideration of quality in higher education and how futures are imagined in the higher education sector.

The concept of sociotechnical imaginaries can also be used as an interpretive lens to explore which normative rationales that justify political choices. It helps to discern how political cultures envision relations between science and society. The sociotechnical imaginary shapes the basis of a shared sense of reality, belonging and political community, not only for a selected group of the public but for a nation. National interests are entities that are imagined and performed through the projection and implementation of sociotechnical imaginaries (Jasanoff & Kim, 2009). National political life is co-produced with development in science and technology, and the thesis argues that national identities are playing a central role in shaping this sociotechnical imaginary. How politics and knowledge develop is always entangled both with how people inhabit the world but also how they imagine their futures (Felt, 2017, p.253). The imaginary of the future of Norwegian higher education is embedded in social and technical imaginations of the future, the digital transformation of higher education can be studied as a of producing the state.

In the visions in the Strategy (2021), the teacher is imagined to have "good educational digital skills that make it possible to design teaching programs that promote good learning for students through digital tools and services" (Kunnskapsdepartementet, 2021, p.27). The researcher, on their side, should have "a good understanding and knowledge of how digitalisation changes the subject and the field of research and utilizes the opportunities that

digital technology provides to develop one's own research and field of study"
(Kunnskapsdepartementet, 2021, p.28). Both these quotes give different perspectives of the
same imaginary: to enable technological trajectories to develop in line with collective
interests. These technologies should benefit everyone across the sector and are imagined to be
incorporated into a system of meaning. Jasanoff and Kim (2009) introduce the term as a
means to explain the emergence of national politics and show that sociotechnical imaginaries
contribute to building the nation-state through the design and implementation of nation-
specific technologies. They are somewhere between imagination and action, where
possibilities are imbued with what is good for society. (Jasanoff & Kim, 2009).

Also included as one of the users in the Strategy is the labour market. For this user, the
Strategy projects that they "experience that the opportunities provided by digitalization are
utilized to offer flexible, accessible, relevant, adapted and inclusive educations that respond to
the needs of working life" (Kunnskapsdepartementet, 2021, p. 29). In other words, the
Strategy is projecting expectations and imaginaries onto the labour market for how they
should expect digital technologies in higher education to come to their advantage. The
Strategy provides an imaginary and involves the labour market as a stakeholder of higher
education. The imagined desirable future for the labour market is one where students are
digitally competent and able to use their knowledge to continue developing their skills
through lifelong learning.

But the possibilities the technologies give are not all that is affecting the visions in the
Strategy. The visions also present an increased responsibility with the use of technologies.
Not only should higher education make use of technological opportunities, but it should also
do so responsibly while education students to become digitally literate. For the student, this
means to become "aware of ethical, legal and security issues when using data and digital
technology" (Kunnskapsdepartementet, 2021, p.26), while for the teacher this means to
"possess the skills to handle data privacy and information security concerning teaching"
(Kunnskapsdepartementet, 2021, p.27). Therefore, these imaginaries entail hopes and dreams
for the future, but also fears and risks around innovation (Jasanoff & Kim, 2009). There is not
only a risk of falling behind if these imaginaries are not fulfilled, but there is also a potential
risk of digitalizing, but digitizing wrongly. Imaginaries need therefore to be well mapped out
and planned for to be able to be translated into actions, and there is a need for knowledge and
experience on how to do it. This fear of risks and the potential hazards associated with
technological development, and the imaginary needs thus to be conscious of this pertained

risk. By being collectively conscious of risks, the imaginary can create the political will needed to attain them. The perception of risk can affect how imaginaries develop, as hopes and dreams can be shadowed by potential wrongdoings in the work on digitalizing.

4.5. Educational quality through digital transformation

Previously in this chapter, the issue in the Strategy was understood to be how digital transformation in higher education means to raise the educational quality. The imaginary that the Strategy presents is a way to picture the future of higher education. Bringing the previous work on the relation perception of educational quality with digital technologies (Aagaard et al, 2018), this section will have a closer look at how educational quality has come to be tied with digital transformation in the Strategy and the Action plan. This section will look closer at what is included in the understanding of educational quality in these two documents, and how digital transformation has been tied to raising the quality in higher education.

> *"[it] changes how we teach and how someone wishes to be tied to a university. There is a big stretch between the different opinions, some think there should be full freedom- to be a student in Bali, or why should everyone start their semester in August, when you can start when it suits you and take the exams when it suits you?"*
> - *Informant 4, Digitalization board.*

The changes that are given as examples by the informants express how digital transformation can make higher education more accessible. This means that students who are not able to be on campus still can participate in education. This way, education can be offered to a larger part of the population, both to students who are having their first encounter with higher education and to someone who needs to continue their education later in life. Changing higher education into being more accessible is the first aspect mentioned in the Strategy when talking about better higher education. Informant 4 reflects on how a turn to digital higher education comes with possibilities, such as flexible study hours or location. Students can be given large freedom, both for when and where they choose to study. This notion of accessibility is largely tied to the understanding of educational quality in the two documents and is frequently mentioned as how digital transformation can make higher education better. Yet, informant 4 reflects:

> *"But we are not talking about adults who have settled, these are students who want and need something more. (…) Maybe it enables for us to access even more people. Or there*

might be some limits, we might even exclude someone. The target group can change, both
for good and for bad."

- *Informant 4, Digitalization board.*

What informant 4 describes, is a conscious relationship to the changes that digital transformation can give. If higher education becomes accessible through digital transformation, the target group will potentially become more heterogeneous than before. To be accessible should not be the only goal, it should also be to meet the needs of every student. Because the group of students will expand, the needs and requirements of this group will also expand. The quote from informant 4 also tells how even though technologies give possibilities that can change higher education, fully committing to these might not be the best way to develop the educational quality digital transformation is imagined doing.

To make higher education accessible does not only mean widening the group of students who embark on their first encounter with higher education. It also means providing the necessary education for employers to continuously be able to update their knowledge.

"We need lifelong learning. A car mechanic who was educated 30 years ago doesn't
do a good job on a Tesla without some update after their elementary education. Like
that, most of us will need continuous follow-up on our competence in one way or
another."

- *Informant 3, Ministry of Education and Research*

Informant 3 is saying that the increase in digital tools and topics has made lifelong learning necessary to sustain digital skills and reflexive technological knowledge. This lifelong learning approach can also be seen as made possible by technology, as someone already employed can go through further education without having to leave work. The implementation of digital technologies is what is transforming education into a continuous learning process, while at the same time, this technological development is also what makes this transformation possible.

Second, the Strategy (2021) imagines higher education becoming better with technology because it gives the possibility to prepare students for a labour market where technological skills are imagined to become increasingly relevant. To undergo an education should not only involve being included in a discipline, but also developing digital skills so they can be

prepared for a work life that is highly imbued with digital technologies. To make education better with the implementation of digital technologies will mean to include to make students digitally literate as part of the education.

> *"The universities have a clear societal responsibility, and to use digital systems which take advantage of technologies gives us some new ways to fill this role, but it does not change what the responsibility is."*
> - *Informant 2, Digitalization board.*

The informant reflects on the role higher education has in society. If education is supposed to prepare students for their work life in the imagined future, the future of the educational system must be taken into consideration. That means that imbuing digital competence into education is a way of imagining this future. Thus, it can be understood that digital competence in higher education is a way of making it better.

Lastly, digital transformation in higher education is imagined to raise educational quality by changing the way students learn. Digital technologies can make students more active in their interaction with knowledge and their discipline. Technologies can be implemented not only as tools for learning but can make the students more interactive with the use of digital technologies. If students must adjust according to the technologies, they can possibly bring new ways of learning.

> *"How digitalization is taken into use in teaching, for instance, student active ways of learning, and that we use digital or technical digital tools to make the quality of teaching the best possible"*
> - *Informant 5, Ministry of Education and Research.*

The informant describes this dimension of educational quality where the implementation of technologies into learning situations can increase student involvement to make learning an active activity instead of passive. This perspective enhances the relationship between actors and technical artefacts, where the technologies structure teaching and learning activities.

These three dimensions are tied to digital transformation and how it is meant to make higher education better. The documents show a perception among political management and the sector that digital possibilities are not being exploited to their full potential. The connection between digital transformation and educational quality can therefore be traced to the imagined

distance between what higher education is and what it could be if digital technologies are implemented. Digital technologies are interpreted as an underexploited resource. Digital transformation will potentially change learning practices to enable these resources to be fully exploited. It is therefore a central concern in this thesis that digital transformation is understood as related to educational quality because it allows for the technologies to mediate how actors perform in their learning processes. A digital transformation allows these changes to happen.

But it is not just the potential of digital tools that make digital transformation tied to understandings of educational quality. Digital transformation can also be a way for institutions to safeguard the quality of education as it already is. It has previously been mentioned that the risk of falling behind on the development or missing out on the opportunities that digital tools give is tied to the development of imaginaries in the strategy. This risk could also be one way for the institutions to secure their educational quality by providing the necessary education and skills that are needed in the future. Digitalizing does not necessarily need to be a rise in educational quality, it could also mean not risking decreasing the quality of education and teaching. To keep their position among other higher education institutions and students, digitalizing becomes a measure to keep their quality. The same arguments for a connection between digital technologies and quality in higher education can be detected in the Action plan.

This chapter has explored the ways the issue of digital transformation in higher education is built into the Strategy. It has examined the theoretical concept of imaginaries to capture how visions of the future have laid the grounds for the development of the issue. It has also detected how previous work on the evolution from digitalization to digital transformation can be discovered by comparing the first Strategy (2017) with the current one (2021). Document analysis of the current Strategy then detected how this Strategy imagines digital transformation through two categorical approaches, to transform institutional practices in favour of technological advancement, and to increase the relevance of higher education by implementing action that will make students more digitally literate. Lastly, in line with research on digital technologies in higher education, the chapter showed how digital transformation is imagined to increase higher education, if institutions are able to transform with digital technologies.

5. Doing digital transformation

The analysis in chapter 4 looked closer at how the content of the two documents focused on imaginaries for educational quality that was closely related to the use of digital technologies. The chapter elaborated on sociotechnical imaginaries to explain how sociotechnical encounters have enabled a vision of the future for higher education and research. Imaginaries inhabit norms and discourses from the culture they have been developed in, and it is from these imaginaries that political preferences and later actions are built. The previous chapter has shown how technoscientific orders and politics are co-produced (Jasanoff &Kim, 2009).

This chapter looks closer at how the imaginaries in the Strategy must be translated into a political agenda to be acted upon. The analysis is concerned with the ways the issue has been defined and interpreted into actions by exploring the Action plan's translation of the issue. These are the actions that allow the institutions to embark on a digital transformation. Additionally, there will be given a closer look into the work and thoughts that went into producing the documents. The chapter explores the ways the sector itself has contributed to the issue through material arrangements and how sociotechnical networks in higher education have come about. The Digitalization board will be examined as a way to make the sector involved in the issue. Lastly, the chapter explores the notion of script to detect how technologies are imbued with meaning, affecting how the technologies are used and implemented in higher education. This chapter will also draw on material from the documents and interviews to be able to explore this.

5.1. Translating the issue

The previous chapter divided the Strategy into two main categories. 1) To transform for better education, and 2) to make sure education meets the needs of the labour market. These two categories differentiate the Strategy on digital transformation from previous work on digitalization because their goal is to transform practices and not only implement digital technologies. However, these categorical approaches do not give suggestions on how the institutions should do this transformation. That is why the Strategy also gives a third category for how to do digital transformation: management for an institutional change. According to this approach, digital transformation cannot happen only from the bottom-up by individual actors such as researchers or teachers. There is also a need for a strategic and systematic

approach from the administrative management. For the transformation to be holistic in the entire sector, changes should follow a clearly visioned path from above. The changes need to be strategized and pointed out by the management and holistically acted out. This means that the Strategy presupposes involvement from the managerial level for the issue to be enacted within the institutions. According to this categorical approach, actions should build towards making visions come to life. To make the vision be acted out within the institutions, strategic management is pictured to enable a holistic transformation.

> «Digital transformation is far more than about technology. Organizational and cultural development is of great importance for the opportunity to successfully transform the institution using digital technology. (…) Management must have the ability to motivate, lead and support ambitious digital change processes» (Kunnskapsdepartementet, 2021 p. 24).

According to the Strategy, there is great potential in digital technologies, but to make use of this potential, changes should be approached from above. The imaginary depends on the institutions to grasp these opportunities. This might also involve a transformation of leadership and managerial attitudes.

> "Organizational and cultural development is of great importance for the opportunity to successfully transform the institution using digital technology. At the same time, organization and culture are shaped by digitalisation. Hence organizational and cultural development should be coordinated" (Kunnskapsdepartementet, 2021, p. 24).

The reciprocal relationship between technologies and organizational culture that this quote describes, tells how management should not only see technology as something that changes education and research for students and academic staff. Like teaching and learning, digital technologies can potentially change leadership and management culture. The management should know how technologies will affect and change the institutions (Kunnskapsdepartementet, 2021), while the expectations of how leaders approach technological changes will be different. The ways imaginaries of digital transformation in higher education can be acted out also depend on strategic leadership. To enact digital transformation there needs to be a desire in the institutions, and leaders therefore need to act as role models.

While the Strategy suggests management to be a facilitator for digital transformation in the institutions, translation of the issue mainly happens through the Action plan. The Action plan has collected measures from the Strategy and turned them into measures that are imagined enacting the issue of digital transformation. The Action plan has already been presented as one way to translate the ambitious direction of the Strategy into more concrete measures, collected from four qualities. The measures are expected to be able to move the sector towards an imagined digital future.

> *"There are already many common measures that are up and running, and many of those are relevant for the different priority areas, so they are being referred to in the action plan. Then we suggest some other measures, both measures to be solved together in the sector, but also possible institutional measures that in a way facilitate for the institutions to be inspired and explore things further."*
> - *Informant 1, Directorate for higher education and skills.*

The informant in the directorate enhances that all the institutions are doing their work towards a digital transformation, but that it is the total sum of all these that makes digital transformation in the higher education sector possible. The Action plan gives strategic measures on how the Strategy should be followed up and accomplished. A statement like this gives the impression that measures are going on within the institutions, while the Action plan gives suggestions to new ones.

Chapter 4 described three aspects of how digital transformation has been tied to educational quality: accessibility, relevance for the labour market and student active learning. Since the action plan follows the direction of the Strategy, these three aspects can also be collected from the action plan. For accessibility, the action plan suggests to

> "Develop flexible and universally designed educations with shorter and longer durability that makes education more accessible for people in every life situation" (Kunnskapsdepartementet, 2021, p.15).

This measure will change the way education is offered for students in different life situations where they can attend higher education. Students will also be able to attend programs across campuses. To change the way students can access their education means to transform how education is done. From what the Action plan suggests, education should be designed around the students to fit with their needs. The student should be in the centre, and digital technologies make it possible to enlarge this user group. This transformation imagines higher

education as attainable to more students according to their needs and is therefore tied to quality in education.

Second, relevance for the labour market is pictured to increase if students and staff learn to be digitally literate.

> "Motivate for a lift in skills through demanding documented educational skills through evaluation of basic skills and pedagogical merit." (Direktoratet for høyere utdanning og kompetanse, 2022, p. 15).

This is imagined making students better suited to interact with digital technologies. This measure shows how digital technologies can become a part of teaching and how it is imagined to positively affect students. As previously mentioned, this means that there are new dimensions to what is considered should be part of higher education. Academic skills thus expand from purely an academic discipline, into also involving competence in digital technologies. To facilitate this, learning institutions can:

> "Develop and share interdisciplinary teaching structures that give the students the basic digital skills they need as students and as citizens, which additionally make them capable of staying updated in the digital development" (Direktoratet for høyere utdanning og kompetanse, 2022, p.16).

These are actions that are imagined to prepare students for the labour market through digital competence. Students need to increasingly be capable of transitions together with societal and technical advancements, something that the Action plan pictures to be facilitated in tutoring and lectures.

Lastly, active learning through the use of digital technologies is part of what digital transformation is imagined changing. A suggestion the action plan gives is to

> "Explore tools that let students practice realistic situations in digital surroundings, for better learning outcomes" (Direktoratet for høyere utdanning og kompetanse, 2022, p.15).

This measure will put the students more at the centre, making them active participants in teaching and learning. For instance, the use of VR technology has been taken into use at some educational programs to make students practice on near life situations from their field. This example is highlighted for inspiration in the Action plan. To put the student in the centre of teaching is imagined raising the quality of education because it makes the students become active in learning. Technologies can change how students can interact with their field. This

also shows how technologies can be transformative because they are not only perceived as tools but also able to change how students interact with knowledge. This is interesting because it constitutes an example of how higher education can be perceived to go through a pedagogical transformation, where the way we think of teaching and learning in higher education is changing. Old teaching models, such as lectures in large halls are seemingly being changed by more active ways of learning. This change has been enabled and moderated by technologies.

5.2. Document work: including the sector

In the previous chapter, the two documents were analysed in terms of their content and contribution to the issue. However, studying documents should not only focus on what the documents say or do. To capture the whole picture of the documents, one must also understand how they were developed. Document work developed by Asdal & Reinertsen (2021) is an interpretive lens used to investigate the work that went into writing a document. To look closer at the document work means to "not take a predefined stance" (Asdal & Reinertsen, 2021, p.63), but to rather dig deeper into the practices put down to develop a particular document. Writing a document is done by someone with a certain purpose. This means that to tell something about the Strategy for digital transformation and the component action plan, one must start with the work that went into it. This next section will focus on the document work for the Strategy and the Action plan to discover the thoughts and actions that went into writing the documents through material from the interviews with informants from the Ministry and the Directorate.

Documents are never neutral. According to Asdal and Reinertsen (2021), documents have been worked out from different political and bureaucratic practices, and looking closer at these processes can tell us something about the concerns and ideas that have impacted the document. What is considered unique in the work put into these two documents is how they were largely influenced by the sector. To write the Strategy, representatives from universities and higher educational institutions were included in a working group that expressed the needs in the sector and discussed these needs with the ministry (Kunnskapsdepartementet, 2021). This working group collected thoughts and ideas across the different institutions to work out a draft of how they thought the strategy should look like. The same working model was used for making the Action plan.

> *"It was an unusual working method- to go out and ask someone else, or to put out a mission like that. For instance, I have later been involved in developing a similar strategy for the lower education, i.e. schools and pre-schools, which was an "in house-work" [with] a working group to develop text, with a lot of input from outside, but it was never outsourced like that."*
> - *Informant 3, Ministry of Education and Research.*

Informant 3 was included in the work of writing the Strategy and tells about the process. The process is described as different from similar document work in the Ministry, where documents usually are made solely among people from the same bureaucratic institution. The informant referred to this as in-house work. The Strategy for digital transformation of higher education, however, was developed partly outside the ministry, by a working group. This working group made a draft for a strategy which was handed over to the ministry who created a strategy on grounds of their political agenda. The document was published for hearing for the public to give their contribution.

> *"If you go all the way back to 2017, then it was the sector itself that called for a Strategy, actually for several years. (...) This was the reason we got a strategy; to collaborate more on solutions."*
> - *Informant 5, Ministry of Education and Research*

This quote makes it possible to consider the construction of how the sector became included in the work on the Strategy. From what the informant can tell, the sector itself wanted a strategy for digitalization, and this seems to have been a catalyst for the Strategy that was made. Marres (2005) notes that it can be hard to grasp how an issue became of particular interest. Asdal (2008) prolongs this by suggesting that sometimes the public might be just how an issue became something of concern and therefore transformed into an issue. From what the informant tells, the issue which is now being discussed in the higher education sector, was first brought to attention by the sector. Reading from the quote above, it can seem like the involvement of the sector in the document work has made a large impact on how the issue turned out. The draft that was made by the working group was prominent for the final version of the Strategy. The Strategy can therefore be understood as dependent on the sector's interest in constituting an issue. The Strategy is the result of document work that is trying to meet the needs of all the institutions in the sector, and to summarize the needs into an overall

direction for the work. In other words, the sector's concern with the development of technologies in higher education is what brought to attention to the issue in the Strategy.

> *"There was sent a draft to us in the Ministry, so then we went on with the process of editing because we need to keep in line with a strategic language from the Ministry and the government. So, we made some adjustments before it was published for a hearing."*
> - *Informant 5, Ministry of Education and Research.*

It has previously been mentioned that visions of the future are representations of what collectives wishes their world should look like. From this quote, the imaginaries of digital transformation in higher education are visions from within this collective. It is not offered from the outside, but it is created by the sector itself. Through dialogues with the ministry, a Strategy can come into being. However, the ministry still had to make the Strategy fit with their perceptions of what the Strategy should say and to make it fit with their overall political agenda.

> *"It is The Ministry who sees the national direction. The institutions, each on their own, can have their own strategy and a plan for how this should happen, but the Ministry can see these collected."*
> - *Informant 3, Ministry of Education and Research*

Informant 3 explains how the role of the Ministry in the work developing the Strategy was their overview of the work on digitalisation in the sector. The Ministry's role is described by the informant as someone who coordinates the work on the Strategy. The informant tells how the ministry needs to make the decisions for an overall direction. The informant describes the ministry as someone who can see the needs of the individual institutions but then must decide on how these can be envisioned as one common future. This can be a balancing act.

> *"It was important that they [the sector] felt ownership of it and that was also the most significant with the first Strategy. They were supposed to recognize themselves in the Strategy, and it should be their strategy, they should own it. Therefore, it was important that the draft came from them."*
> - *Informant 5, Ministry of Education and Research.*

Writing a document means to describe something and from there establish an object of matter in a specific way (Asdal and Reinertsen, 2021). By emphasizing that the Strategy should belong to the sector, informant 5 describes that including the ideas, norms, practices and

wishes of the sector was an important part of how this specific object of matter in the Strategy came into being. The informant also highlights that it was important for the Ministry that the sector had an ownership to the Strategy. To include the sector in the work on making the documents could be understood as a way to establish this ownership. Anchoring the document work within the sector was crucial for the development of a Strategy which could be close to already ongoing actions.

5.3. Keeping the institutions aligned

The chapter has so far talked about how the Action plan is translating the issue in the Strategy into actions that can be implemented into the sector. The content of the two documents has been explored, as well as the document work included in writing the two documents. This looked into the thoughts and visions for the workers, to detect the norms and values within the Ministry for what digital transformation entails. The Strategy was developed with a close collaboration with the sector. To work out a digital transformation needs much effort, both from the government and the institutions. This next section looks closer at what the documents do to make sure that the initiations are kept aligned on the same transitional path.

Neither of the two documents give a very precise descriptions or suggestions on how this should be done. While the Strategy leaves out every bit of concrete suggestions for actions and only point out a political agenda, the Action plan makes suggestions on measures that the institutions can adopt for their work on digital transformation. These measures are developed from already ongoing actions at the different institutions. However, both the documents have vague description of how the institutions can include actions towards digital transformation.

> *"I remember that we were precise about it when we were about to pass the action plan in the Digitalization board, that we did not pass on the projects that were written there, because they come as autonomous consideration. But it was decided on a direction, and there is an expectation that all the institutions are familiar with the action plan for their own priorities."*
> - *Informant 2, The Digitalization board.*

What informant 2 is telling gives the impression that actions should be kept outside the Strategy. Concrete actions were decided to be left outside and should be discussed as individual cases. Larger common measures should be discussed and decided on in the Digitalization board, apart from the Strategy. What this quote is telling, is that a strategic

direction for the work should not include actions on how to proceed with the work. The Strategy should give a general idea, while actions need to be taken by each of the individual institutions, and by the Digitalization board. From the large involvement by the sector, the institutions have themselves been able to contribute to how the Strategy should look like, but actions are kept outside.

> *"There were many processes in the sector to discuss how detailed the strategy should be, at what level it should be, and we of course followed these [suggestions]".*
>   - *Informant 5*

Informant 5 tells is how the Strategy was made to fit with the needs of the sector. From what this quote tells, there was a dialogue between representatives from the sector and the Ministry, where the question of how detailed the Strategy should be was raised. Reading the Strategy while knowing this, it could seem like the decision to make the Strategy less specific was based on the wishes of the sector. In other words, the vagueness of the Strategy might not only be a strategic decision from the Ministry to keep the institutions aligned. It can also be an expressed wish from the institutions which did not want too many instructions for the work on digital transformation.

The action plan, which was developed to give a more comprehensive direction in this work, can also be detected to approach measures with the same method. Actions that are described in the Action plan still come off as vague to the reader.

> *"At the same time, we have to see it in relation to measures that are already going on, because the capacity in the sector should also have resources and the skills and people to implement all this. (...) It gives a direction, and a course on a concrete level in accordance with how the strategy can be followed and implemented."*
>   - *Informant 1, Directorate for Higher Education and Skills.*

What the informant is telling, is the way the action plan was developed and how actions were chosen. The informant is confirming the claims that are described in the plan, where suggested actions should both be something the intuitions can go through with, while they create something or solve a problem. By now, the thesis has described the performative role of imaginaries in founding political decisions. In opting for any vision of the future, visions can serve as a political resource to justify actions and align actors (Beck et al, 2021). The

future vision in the Strategy is constructed through social and technical arrangements and is projecting a political direction. But to enact this goal, the institutions need to agree. It was previously described that the Ministry found it crucial that the sector felt an ownership of the Strategy because it is the institutions that are able to enact the digital transformation that is envisioned. So, while the vision is a political resource, the Strategy cannot be too instructive. By keeping it ambiguous, the institutions can themselves act out the vision, and by themselves bring visions into being. Adding on to this interpretation of the Strategy is to understand it not only as being left vague to keep the institutions aligned on the sense of direction. The Strategy can also be seen as a tool for communication among the institutions. By keeping its suggestions vague, the Strategy invites the institutions into further communication on how the work on digital transformation should be acted out. This means that it is not only what the documents say that are of interest. It is also what they do. And by being vague in terms of actions, the documents are bringing the institutions together. The Strategy is a political tool, not only because it brings out the political and presents an issue, but also because it makes communication on the topic possible. This will be further elaborated below.

5.4. The Digitalization board

We now know that the issue in the Strategy was developed together with the institutions. We also know that it is the institutions themselves that can enact the issue. However, how they are able to contribute to modify the issue has not been discussed. This next section will look closer at how material arrangements have enabled for the sector to contribute to the articulation of the issue.

From the first Strategy on digitalization in higher education, a co-governing model was created. The co-governing model is divided into different sections, with a Digitalization board as its highest representative level. The board is responsible for institutional participation, collaboration and strategic work assessments on digital transformation in higher education. The board consists of representatives from different universities and higher education institutions in Norway. The board is licit to decide on long term plans for the sector, and the goals for common investment funds. Apart from this, it is an arena for discussion and is an advisory agency for the directorate in their work on digital transformation. Below the board, there are several portfolio groups which each govern their an individual area (Direktoratet for høyere utdanning og komptenase, 2022). This co-governing model is made to ensure

influence and involvement from the whole sector in the digitalization work (Direktoratet for høyere utdanning og komptenase, 06.10.23).

Through the Digitalization board, the sector is given an arena where their opinions can be voiced, and discussions can be made. It brings out the voice of *a public*, understood as "the people directly or indirectly affected" (Asdal, 2008, p. 20). This needs to be understood as different from the public. A public is not a given entity, it must always be constructed in co-production with the material arrangements of politics (Asdal, 2008). This specific public was articulated through the Digitalization board, where representatives from the sector constitute a public, voicing the sector's opinion. The Digitalization board exists as a material arrangement through which a public can contribute to making a political agenda. The board's structure facilitates for the different institutions to meet and discuss the matter between themselves. It is a technology for politics through which the issue can be articulated and discussed. This means that when studying how a public is created, both the social and material factors matter. Together, such technical and material components make the board possible.

This understanding of a public is not necessarily the only public that exists but can also be seen in a larger context. The Digitalization board is part of a larger co-governing model where the portfolio board advise the Digitalization board. Here, there are different interests involved, such as students, organizations, and other governing institutions. The public that is constructed through the Digitalization board is only one way to construct it. Several other versions also make up a public in this case, but the focus has been put on the Digitalization board for their effects on decisions.

This mediation of a public is allocating power (Jasanoff, 2006) because it makes an impact on how the issue is framed. Once the public is mediated through the Digitalization board, they can share their opinion. However, there is not necessarily one shared opinion within the board. Different interests are discussed, and from these discussions, there can arise a shared interest which is expressed as the board's common will.

> *"They have contributed to making it [the strategy]! They have contributed processing it, and it has been decided on in the Digitalization board".*

> *"The co-governing model is important for understanding how the digitalization work in the higher education sector functions".*

From what the informant says, the board's influence has been crucial for how the Strategy was developed and how it ended up looking. How the issue comes to be shaped depends on who has been included in producing it. The sector's opinions and needs have modified the issue. Thus the mediating of a public affects the issue and allocates power.

> *"We try to make larger common systems, where the institutions get some help, but we then have to develop the rest of the solutions ourselves, but all of the institutions have to share the same development, and then everyone should share their opinion about changes."*
> - *Informant 4, Digitalization board.*

The informant shares thoughts about the process in the Digitalization board and is experiencing ambiguity in the work. On the one side, the board is a place for the institutions to share their opinions on the work to digitize. It should help the institutions gather on collective measures. On the other side, institutions must make these transitions happen by themselves. The higher education institutions are largely autonomous and through the Digitalization board they can approach the turn to digital solutions as a collective. From the quote by Informant 4, it is possible to read that even though the digitalisation board is mediated as a public with shared interests, the work to do the transformation is dependent on how each of the institutions approaches this task on their own. Even though the Action plan gives specific examples of how to make a transition into digitalization, these are only suggestions. The actual decision on how to proceed with a digital transformation must be made by the institutions themselves.

5.4.1. Communication tool

Just as much as the documents are tools for communication, so is the Digitalization board. It is through this technical arrangement that the institutions can come together to discuss the matter that the documents put forward. The Digitalization board must therefore be understood as a continuation of the documents, where the issue is presented, translated into actions, and left vague for the institutions to be kept aligned. The communication which the documents foster can be actualized in the Digitalization board.

Although the institutions have shared interests that affect the Strategy, they also have dividing interests. This could for instance be related to the institution's size. Supporting this argument is also the statement from informant 2:

> *"The people who are sitting around the table [the Digitalization board] are genuinely encouraged with preserving the sector and holds a high level of leadership in their own institution, so none of us can go home without having taken responsibility for what they should do next".*
>
> - *Informant 2, Digitalization board,*

The Digitalization board is an arena where ownership and responsibility are made. From what the informant says, it can seem like the representatives in the Digitalization board can bring the decisions back to their institutions. Not only are they representing their institutions, but they have a high position within their institution. This could mean that they can bring the decisions directly back to their home institution. But informant 4 gives another perspective:

> *"It is very representative for the sector. The people there are there on behalf of the sector, not their own institution".*
>
> - *Informant 4, Digitalization board*

Informant 4 describes how the board is meant to be one entity. The representatives in the board are there to represent the whole sector and to discuss measures that will affect the whole sector. This quote is interesting to see together with the previous one by informant 2 because it gives an impression of a dichotomous role in the board. From what informant 2 says, the representatives are responsible for taking action in their institutions. Informant 4, on the other hand, explains that the board is meant to represent the sector as one entity and solutions discussed in the board are valid for the whole sector. The board is evidently *a* public, but the public's opinion arises from processes of discussions on interests and preferences. A public that has been shaped by and is shaping the issue.

As mentioned above, a public does not necessarily mean one shared opinion. Studying the Digitalization board, the relationship between the institutions can be seen as opposing opinions. The Digitalization board facilitates for discussion of these different needs and opinions. By having a governing model that facilitates discussion among the institutions, the needs of the smaller institutions can be heard. The Digitalization board is meant as a measure

that the whole sector can be part of the transformation that is imagined. However, there is some suspension.

> *"Sometimes there are very different needs between the largest and the smallest. (...) Some things must be adjusted to the larger ones, if not the digitizing and the digital transformation will have much less value."*
> - *Informant 2, Digitalization board*

The informant tells about some differences between the largest and the smallest represented institutions in the board. To make a digital transformation is demanding for the institutions. There are differences in what tasks they can take on. That is why Informant 2 mentions how the changes must be accustomed to the larger ones to make good solutions. The informant also makes clear that the board should not make decisions that force the smaller ones into systems they cannot handle. The work towards digital transformation is a balancing act which needs to include the voice of higher education.

The relationship between the institutions is not the only thing that makes the board interesting. Another essential feature is the relationship between the Digitalization board and the governmental organization, Sikt. Sikt is a state organization for shared digital services and provides services and products such as ICT solutions to the higher education sector (Sikt, n.d.-a). This role as a service provider has been delegated to Sikt by the Ministry of education and research[5], and Sikt has received large parts of the financial funding from the government on behalf of the sector. Sikt therefore has a central role in building digital solutions and infrastructure for the higher education sector, while the Digitalization board has an advisory role to Sikt (Sikt, n.d.-b).

> *"I think that the suspense between the impatience in the institutions and the time it takes at Sikt is a more significant suspense than the one between the different institutions. Because we are totally dependent on the deliveries being on time, if not there will be impatience in the sector and they will find their own solutions".*
> - *Informant 2, Digitalization board.*

Informant 2 talks about the power relation between the board and Sikt. The institutions can have discussions among them on how they should collectively move forward with the digital

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[5] Letter for awarded assignments from the government to Sikt:
https://www.regjeringen.no/contentassets/8f689d805906494c95b9aaeb45578e1f/tildelingsbrev-sikt-2023.pdf

transformation. However, the sector is dependent on Sikt to provide the solutions fast enough. While the Board makes some decisions, it mostly expresses the sector's needs and wishes to Sikt. Sikt then goes on to work with the advice to develop digital solutions in line with what the institutions need. But if the advice is not followed through by Sikt quickly enough, this can create tension between Sikt on one side and the institutions on the other.

> *"There is a lot of power to digitize within the sector, and if this work is not coordinated- well there are some things happening in Sikt, but we cannot wait for that- then we will have to make our own structure. So if the Digitalization board does not work I think we will use our resources very wrongly."*
> - *Informant 2, Digitalization board*

The work to digitally transform higher education must happen through collaboration, both amongst the institutions themselves, and between the intuitions on one hand and Sikt on the other. The informant tells a narrative about how the larger institutions are powerful enough to make changes for digital transformation by themselves. The Digitalization board brings the sector closer to the administrative positions to potentially avoid resources being wrongfully spent through collaboration. But the institutions are impatient. Decisions must lead to actions to keep the institutions aligned and to stay in the Digitalization board. This creates a suspension between the board and Sikt.

Previously in the thesis, the rapid speed of digitalization has been mentioned as a challenge the sector of higher education is facing in their work on digital transformation. To work out processes to collectively digitize has therefore been an incentive for the board to be created.

> *"We are dependent upon the solutions coming when we need them. If not there will be impatience in the sector, and the institutions will find their own solutions, while the common solutions will add on to these. Then we have spent a lot of resources on parallel measures".*
> - *Informant 2, Digitalization board*

To make rapid decisions on digital transformation, the sector must be aligned with the direction for the actions to a digital transformation. But it also depends on the services being provided quickly enough. This can be done in the Digitalization board, where the different institutions and Sikt can have a dialogue. Creating a Strategy and later an Action plan takes

time, and if time is of the essence, as informant 2 describes, decisions can easily be made individually, if not delivered on time.

> *"We can easily spend a year on making an action plan, and then each institution will make their own action plan after that, and then we will already be behind. It's something about making good preparations, but not for too long, cause then the digitalization will evolve ahead of us and we will digitize in an old-fashioned way because it is evolving so quickly".*
>
> - *Informant 2, Digitalization board*

According to Informant 2, the whole process from Strategy to action cannot go too slowly to make a digital transformation. From what the informant describes, the sector experiences the turn to digital solutions as going rapidly and happening beyond their control. To stay aligned with this change, a common direction and decisions must all be made quickly to not fall behind on the change. This ties the latest quote from informant 2 with the previous argument, saying that there is impatience within the sector. The larger institutions have the power to make the change on their own, separate from Sikt. The board's job is to make sure actions are made for the whole sector, while Sikt continues to deliver services on the sector's behalf. The speed of digital development makes the Board necessary for making the work for digital transformation in higher education effective. From what this section has discovered, the board is a political technology through which the sector is included in discussions and decision-making on the work with digital transformation. Alongside the documents, it is a tool for communication, where the institutions can create their visions from the imaginaries that are presented in the Strategy.

5.5. Scripted technologies

The development of digital technologies has made a large impact on the way higher education perceives its role in society. The thesis, along with previous research on digital transformation in higher education, has so far shown how digital transformation is understood to involve a change in how the institutions in higher education interact with technologies. Technologies have influenced not only how students learn, but also what students should learn. This last section in chapter 5 will explore how technologies in higher education have a transformative power. It will involve a description of how technological artefacts have visions about the user inscribed into them and that this affects how they are implemented into the institutions.

It has previously in this thesis been described how imaginaries of the future and discussions on the matter are enabled through sociotechnical encounters that create tools for communication. These social and technical encounters are continuously producing and reproducing one another. At this point, the research has described that humans, in relation to institutions, organizations and artefacts, are responsible for shaping the social world (Latour, 1992). They exist in a network where they act in relation to one another. Therefore, one cannot examine technological devices as what drives the development of digital transformation of higher education. Not only humans are actors, but technologies also have an agency which affects their surroundings. These technologies are adapted by humans and integrated into social networks, where human actors and technical artefacts are continuously co-produced.

> "Digital technology has the potential to move disciplines, education and research forward. Hence a digitalisation strategy also has to deal with how the institutions carry out their core tasks: education, research and dissemination, including innovation." (Kunnskapsdepartementet, 2021, p.5).

The Strategy points out a structural change in higher education. Digital transformation is not just something that makes certain tasks easier and more efficient, but something that makes a whole sector transform to adopt these digital technologies.

> *"[...] when we started digitalizing, we were really thorough with not letting the systems deciding how we should work, but we should decide how the systems work. But now we have come so far into it that the systems actually govern a large part of how we should work. Actually, that is smart of us."*
> - *Informant 2, Digitalization board*

This quote is interesting because it tells how digital transformation presupposes that institutions will have to transform to take advantage of digital technologies. To properly take advantage of technical developments and integrate them into the established educational system requires the institution to change. The quote from Informant 2 also tells how this perception has changed over time, where transforming by technological development has not always been as widely accepted amongst higher education institutions. Now, this is considered smart. Digital technologies, which largely have been viewed as tools or instruments for other goals, such as writing and communication, are new technologies that

enable a fundamental change of practices. Digital transformation presupposes institutions to change according to the technology so they can bring out their full potential.

This is exemplified by a case by informant 2. When the library system was changed for all higher education institutions a few years back, the institutions who prepared themselves for a new system, received new opportunities. They were able to change the way they worked to gain these possibilities and were therefore satisfied with the new system. Those who did nothing to prepare for the new system and continued to work as before but with a new system were dissatisfied and did not gain anything. They only experienced that their old routines became more difficult, working a new system into an old routine.

> *"When new developments happen, we have to think about how we work. This is logical because it is at this area where we are supposed to gain benefits, to adopt more efficient ways, where the system handles tasks humans did before"*
> - *Informant 2, Digitalization board.*

From this perspective, technologies will provide the sector with opportunities and advantages if the institutions can adapt to digital technologies. The informant also emphasizes that transforming is the right way to digitize because that means that more efficient working methods can be integrated. Increased efficiency ties up with educational quality and shows digital transformation as the correct way to include technologies in education. Knowing that technologies and social actors exist in a constant relationship, this can be detected as affecting the implementation of digital technologies. Akrich (1992) argues that technologies are made with an intended use and meaning and that these are inscribed into the artefact. She argues that digital technologies are designed with intentions on how to use them and who the users are. They are *inscripted* (Akrich, 1992). The script tells the user about the technology's intended useage. The artefacts hold a vision (Fallan, 2008) of the actors and the world they live in. For this vision to be actualised, users must change accordingly. Increasing interaction with digital technologies as part of everyday life for students and staff means having to learn how to make use of these technologies in a productive way. The same counts for the change of larger systems where digital technologies make room for new practices. This means students in higher education must learn how to make use of technologies appropriately according to new regulations.

Technologies have a transformative power (Aagaard et al., 2018), not only for the process of learning but also for how knowledge in higher education is perceived. It has previously been described how digital literacy is an important new aspect of higher education. The way students learn and interact with digital artefacts is more important than before. Digital learning processes are performative because they change what knowledge and learning should entail. With digital technologies, information can be copied, shared, manipulated and then shared again (Aagaard et al., 2018). They might disrupt existing practices while they bring new possibilities to life. They have visions about the user inscribed into them, thus practices are transformed when users commit to these inscriptions. Examples of how digital transformation is imagined can be found in the Strategy:

> "Develop pedagogical principles and didactic methods that contribute to the use of different digital teaching and assessment methods to improve learning, as well as involving all students." (Kunnskapsdepartementet, 2021, p.13)

> "The interplay between discipline and technology has for many years laid the foundation for new knowledge. However, digital technology not only creates new subjects and fields of research, it may also change the very way education and research are conducted." (Kunnskapsdepartementet, 2021, p. 15)

The quotes above show what the Strategy imagines students need to learn in the future, but also how technologies will change the way students learn. Seen from this perspective, technologies are not only tools. They are artefacts that come with certain inscriptions for how they should be used. To take these inscriptions seriously involves changing practices so that these inscriptions can unravel in the way they were imagined to. Therefore, institutions must transition according to these inscriptions to make use of the technologies and to be able to let the technologies play the role they are imagined doing in the Strategy.

However, this description of digital technologies does not paint the entire picture. Some of these imaginaries are not supposed to transform the institutions for the technologies to be properly used. Rather, they suppose that technologies are developed to better fit the user than what they do today. This perception centres the students and supposes that technologies will make education better by developing technological solutions that fit the user's needs.

"A user-centred approach to the student must be applied, and digital technology will be used to develop more adapted and flexible courses with high quality." (Kunnskapsdepartementet, 2021, p.8)

The Strategy is working out a way that education can be made hybrid to better fit students in all life situations. This still makes the technologies inscribed with visions about the people using them, although they were developed with a specific user in mind, they are not predisposed to an imagined transformation, rather they are designed to make possible the change that is already imagined.

"Digital flexible education has to be based on a clear understanding of the education seekers and their needs and preferences for teaching and learning. To achieve this, students, teachers, researchers and the labour market must be given a real opportunity to participate in the design of education, both in terms of academic content and form." (Kunnskapsdepartementet, 2021, p.10)

This quote supports the idea of education being shaped around the students. It also suggests that education should be reshaped to fit the needs of different interests by using digital technologies. This puts the technologies in a continuous feedback loop, where users might generate a different meaning around the use of an artefact than what the designer intended. Technologies are continuously redefined and shaped with the feedback from users. The designer cannot fully capture the situated action of the user before the technology is released (Fallan, 2008). The user of a technology can choose to accept, reject, or only partly accept the script. The user does therefore not have to use the script that the technology is made with. User feedback is therefore crucial to the development of digital technologies that can be used.

This chapter has focused on how the issue on digital transformation in higher education is being translated into actions for the institutions to carry out. This has been explored by looking closer at the document work to understand what practices went into writing the documents, as well as the thoughts, norms and values included in this document work. This discovered how the sector was made part of the process also in writing the Strategy and the Action plan. The chapter then moved on to discuss whether the documents have been left deliberately vague to keep the institutions aligned with the overall direction for digital transformation. The Digitalization board was explored as a political technology where a public can come into being, and as a tool for communication where the institutions are

brought together for further discussion. Finally, the chapter presented script theory to further describe digital transformation as the turn to transformative measures in the institutions to stay aligned with technological advancement. The script provides a perception of digital technologies as scripted with intended ways of using them.

6. Discussion

The Strategy (2021) aims to change core actions within higher education institutions in line with digital technologies. The Action plan (2022) provides a concrete direction for strategic areas, and recommends changes for common services and institutional measures. The document analysis aspires to understand how they contribute to modifying the issue of digital transformation in higher education. The analysis has also focused on how the issue is translated into actions. The documents have been studied in combination with interviews with informants from public administration institutions and the Digitalization board. In the introduction, I asked the following research questions: *Which social and technical encounters are affecting the imaginaries of digital transformation in the Norwegian higher education? How are the documents and the Digitalization board set in place to allow these imaginaries to be carried out?*

These have been researched by first studying how the issue is built, and second how the issue is translated into actions. In the following chapter, I will revisit the assumptions the documents make. I will once again look at the contributions from the analysis and discuss this further in line with the theoretical framework. At the end, I will present the contributions of this research together with its limitations and suggestions for further research.

The notion of digital transformation has evolved from digitalization, where digital processes are added to existing practices, whereas digital transformation can be described as the transition of institutional practices to better exploit digital technologies. The analysis discovered that the Strategy presents the issue of how digital transformation can be used to raise the educational quality in higher education.

The research has used sociotechnical imaginaries to understand how collectedly held visions of a desirable future have developed into political measures. The imaginaries stem from both social and technical conditions, whereas the research has pointed to the documents and the Digitalization board as technical arrangements. This imaginary has contributed to making the issue because it creates a desirable future. In addition to the opportunities technologies give higher education, the research has found that the notion of a risk to motivate the institutions to continue towards digital transformation. This constitutes what this thesis has recognized as a dual motivation for digital transformation.

The Action plan has been studied as a document where the issue is being translated into actions. The issue moves across documents and is being presented in the action plan as specific measures for the sector to make for a digital transformation. However, the research found these actions to be vague and interpreted this to mean that the actions are deliberately kept vague to make sure the institutions are aligned. Therefore, the analysis continued by discussing how the documents are tools for communication and for aligning the institutions, rather than telling them what to do.

This led the thesis over to the Digitalization board, which has been studied as a mechanism for allocating a public. The thesis looked closer at the governing model as necessary to digitally transform higher education. It also discovered a power suspension between the institutions on one side, and the governing organizations on the other. The work to digitize is swift, which means that coordination across the different institutions is crucial. Through the Digitalization board, the higher education institutions and public administration are tied closer together.

Finally, the thesis examined digital technologies through the theoretical framework of script. This allowed the researchers to see how the technologies presuppose a change with the institutions. This is because technologies are inscribed with visions of the user, and functions according to these inscriptions. Therefore, the research has found that higher education institutions must be accustomed to these inscriptions to make their potential matter. This is what is referred to as digital transformation in Norwegian higher education. This perspective highlights the definition of digital transformation: to transform with the technologies.

6.1. Scripts and users

Through the thesis, the user has been researched as a way for imaginaries to be allocated and projected. Imaginaries about the user in digital transformation have been projected into the technologies and consequently shaped thereafter. However, the inscriptions are not completely performative. Users can choose to either accept or reject the script in the technologies. They can also choose to accept the script only partly (Akrich, 1992). Script analysis helps to understand the relationship between producer and user. The different users are portrayed and implemented into the script, while the users can interpret the affordances of the technologies in unique ways. It is never just one stream of interaction, but a continuous reciprocal relationship between producer and consumer, which participates in shaping the technologies. In other words, the technology is never finished when it leaves the producer's

hands (Fallan, 2008). The Strategy's five visions for the future were presented in chapter 4. These imagine five different actors in higher education who each can have different expectations to digital transformation. These five actors have been interpreted as users of digital technologies in higher education, who all have different needs and different approaches to technology interaction. This means that the technologies can function differently for different users, as the interpreted symbolic, cultural, and social meanings will vary with the user.

Similarly, the Digitalization board has been analysed as a technical arrangement which allows a public to come into being. It has been constructed to bring the institutions together for discussions on digital transformation in higher education. The board is therefore imbued with imaginaries of how it should be used. The Digitalization board is based on coordination between different authorities to find solutions to a complex challenge. The very design of the Digitalization board is scripted to fit with digital transformation. Meaning is produced by the imaginaries of digital transformation which transforms into the script of the Digitalization board. The Digitalization board is thus scripted with intentions of how it should be used and with imaginaries of what the results should be.

6.2. Social and technical encounters

The thesis has turned to the interpretive lens of sociotechnical imaginaries to discover how the issue has developed through visions of the future, and into actions. Studying the matter through imaginaries has made it possible to show that the ways of representing and knowing a phenomenon and the ways to act upon it are inextricably tied together (Jasanoff, 2006). How actions are brought into being is thus not a neutral activity but is entangled with how people inhabit their society and how they imagine their future to be. (Felt, 2017). Nor making knowledge is neutral, but This means that the issue has developed through imaginaries of the future and that these imaginaries are performative, acted upon through political decisions for digital transformation. Sociotechnical imaginaries have been explained to have developed from the complex interconnection between material and normative dimensions as continuously shaping one another. These dimensions affect how the institutions choose to act upon it. How the issues are built affects the knowledge-making in higher education. Thus, who is included in shaping the issue, is also included in making knowledge.

The research results reflect how digital transformation presupposes transforming practices in higher education institutions. The research recognizes the model for co-governing as crucial in the work to include different voices in the work. While former research on digital transformation in higher education have focused on the effects of digital transformation on an institutional and individual level, this research wanted to understand more of the practices involved in making the Strategy, as well as the material and social arrangements that made it possible to move from imaginary to issue and into actions. Accordingly, the focus of this research has been on the structures that are set in place to allow the imaginaries associated with digital transformation in higher education to be carried out. The limitation of this research is its reduced ability to explore how changes are made to implement digital technologies in higher education. The research has based its empirical data on public documents and interviews to explore the structures set in place for digital transformation in higher education. It is therefore beyond the scope of this research to investigate how the visions and suggested actions in the two documents are implemented and actualized by the institutions. This also includes a user perspective of digital transformation in teaching and learning in higher education, which has not been the motive for this research. The implementation of digital technologies is a continuous dialogue between the user and producer, but this dialogue has not been possible to study sufficiently through the documents and interviews with the informants chosen for this research. Thus, this research advocates for the topic to be revisited when actions and their implications in the institutions can be studied together with the documents.

There are several social and technical encounters affecting the imaginaries of digital transformation detected in the thesis. Firstly, it is the vision of the possibilities of what digital technologies could do for higher education. This has been tied to understandings of educational quality, which contains accessibility, relevance, and student active learning. In addition to this, the risk of falling behind if the institutions do not digitize is also present. The motivation is the social aspects. Technical aspects affecting the imaginaries are the physical features of digital technologies which are imbued with a script of the user. It is also the documents through which the sector has been involved in shaping the issue, and the Digitalization board as a tool for communication. Parallelly, the Digitalization board allows for the institutions to discuss the issue among themselves and together with Sikt. All of these together are how the issue develops and is translated into action through surrounding structures.

6.3. Concluding remarks

I started this thesis by saying that we live in a digital age, even more so after the disruptive impact of the COVID-19 pandemic. This can be discovered by comparing the government's first Strategy for digitalization in higher education sector (2017) with the current Strategy for digital transformation in higher education (2021). I embarked on this research with the prejudiced perception that a strategy for digital transformation for an entire higher education sector was too ambitious. Therefore, I approached the Strategy thinking that all the visions upon which it is built could hardly be set into action. The Strategy is ambitious, for sure. The Action plan as well. Documents alone cannot make digital transformation happen. Measures must be enacted by the institutions. I would therefore like to revisit the notion of vision one last time.

I do not know how the institutions imagine enacting these visions in the Strategy. I have studied how the imaginary of the future turn into an issue of educational quality through digital transformation, and then later how they are translated into actions. What I do know after the end of this research is that these visions about the future of higher education are constituting a sense of self. Through relations of technical and social arrangements, visions describe both what higher education is today and where it wishes to go. They represent how the collective wants the world to be, as well as the acts towards bringing this into being. Therefore, the vision should always be considered when studying how people and politics set out towards the future.

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